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## An assessment of the labor market, income, health, social, civic and fiscal consequences of dropping out of high school: findings for Massachusetts adults in the 21st century

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**An Assessment of the Labor Market, Income,  
Health, Social, Civic and Fiscal Consequences of  
Dropping Out of High School: Findings for  
Massachusetts Adults in the 21<sup>st</sup> Century**

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“This boy is ignorance. This girl is want. Beware them both, and all of their degree, but most of all beware this boy, for on his brow I see that written which is doom, unless the writing be erased”.

Charles Dickens,  
*A Christmas Carol*

## Introduction

Over the past five years, a growing number of educational researchers, labor market analysts, national foundations, national and state business organizations, city mayors, governors, and state legislators have focused on the problems of America’s high school dropouts.<sup>1</sup> Dropout problems among America’s high school students remain excessively high, especially among large urban, public school districts, males, Black and Hispanic youth, and low income youth of all races. These high dropout rates have persisted despite the fact that the personal and social costs associated with dropping out of high school appear to be both quite large and growing. Male dropouts in particular have faced a number of severe labor market difficulties in recent decades, with steep declines in their real wages and annual earnings.<sup>2</sup> Their deteriorating labor market fortunes have reduced their ability to form independent households, to marry, to support their children, and to contribute positively to the fiscal position of state and national governments. To paraphrase the above quotation from Charles Dickens’ classic story *A Christmas Carol*, economic doom is indeed written on the brows of many Boston and

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<sup>1</sup>For a review of recent national, state, and local research studies on high school graduation and dropout rates, See: (i) Gary Orfield (Editor), *Dropouts in America: Confronting the Graduation Crisis*, Harvard Education Press, Cambridge, 2004; (ii) Elaine Allensworth, *Graduation and Dropout Trends in Chicago: A Look at Cohorts of Students from 1991 Through 2004*. Chicago: Consortium on Chicago School Research at the University of Chicago. <http://www.consortium-chicago.org/publications/p75.html>; (iii) Jay P. Greene, *High School Graduation Rates in the United States*, New York, Manhattan Institute and Black Alliance for Education Options. <http://www.manhattan-institute.org>; (iv) Christopher Swanson, *Who Graduates? Who Doesn’t? A Statistical Portrait of Public High School Graduation*, Class of 2001. Washington D.C.: The Urban Institute. [www.urban.org](http://www.urban.org); (v) Nancy Martin and Samuel Halperin, *Whatever It Takes: How Twelve Communities Are Reconnecting Out-of-School Youth*, American Youth Policy Forum, Washington, D.C., 2006; (vi) Daria Hall, *Getting Honest About Grad Rates: How States Play the Numbers and Students Lose*, The Education Trust, June 2005; (vii) Andrew Sum, Paul Harrington, et. al., *The Hidden Crisis in the High School Dropout Problems of Young Adults in the U.S.: Recent Trends in Overall School Dropout Rates and Gender Differences in Dropout Behavior*, Center for Labor Market Studies, Northeastern University, Boston, Report Prepared for The Business Roundtable, Washington, D.C., 2002; (viii) Ishwar Khatiwada and Andrew Sum, *The Recent Labor Market Experiences and Problems of the Nation’s Young High School Dropouts: Their Implications for the JAG Dropout Recovery Program*, Prepared for Jobs for America’s Graduates, Alexandria, Virginia, June 2005.

<sup>2</sup> See: (i) Andrew Sum, Tim Barnicle, and Ishwar Khatiwada, *The Labor Market Experiences of the Nation’s Young Adults Since the Publication of America’s Choice*, Report Prepared for the National Center on Education and the Economy, National Skills Commission, Washington, D.C., 2006; (ii) Peter Edelman, Harry J. Holzer, and Paul Offner, *Reconnecting Disadvantaged Young Men*, Urban Institute Press, Washington, D.C., 2006.

Massachusetts high school dropouts unless public policies are developed to improve their schooling, academic and occupational skills, and employment prospects in the immediate future.

Both the Bush Administration and the U.S. Congress voiced concerns over the low rate of on-time graduation rates from public high schools in their passage of the No Child Left Behind legislation in 2002.<sup>3</sup> The Act also provided a definition of high school graduation rates that it asked states to adopt in calculating their high school graduation and dropout rates.<sup>4</sup> During the past few years, the Youth Transition Funders Group, a coalition of local, regional, and national philanthropic organizations, has funded seven cities, including Boston, to analyze dropout problems in their cities and develop strategies for reducing future dropout problems and attracting former dropouts back into the public school system.

The Youth Transition Funders group in Boston has provided funding to the Center for Labor Market Studies to provide analyses of school dropout problems in Boston and Massachusetts and to help assess the economic, labor market, and social consequences of dropping out of high school before graduation.<sup>5</sup> The work of the local Boston Youth Transition Funders Group and other state/local efforts to address the dropout problem in Boston and other cities and towns across the state would be aided by the availability of timely and comprehensive data on the labor market, income, health, social, civic, criminal justice, and fiscal consequences of dropping out of school in Massachusetts.<sup>6</sup> This research report was prepared for the Boston Youth Transition Funders Group. It is designed to provide the Group's members as well as local public policymakers, educators, and the public at large with information on the labor market, income, health, family, criminal justice, and fiscal consequences of dropping out of high school in Boston and the state as a whole. A wide array of measures of the labor market, income, crime,

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<sup>3</sup> See: 107<sup>th</sup> U.S. Congress, No Child Left Behind Act of 2001, Washington, D.C., 2002.

<sup>4</sup> This definition of a four year, on time graduation rate and alternative measures of high school dropout rates can be found in Dropouts in America: Confronting the Graduation Crisis.

<sup>5</sup> In our earlier set of research papers for the Boston Youth Transition Funders Group, we have generated estimates of the numbers and demographic characteristics of students in Massachusetts and the city of Boston who have left high school before obtaining a regular high school diploma.

See: Andrew Sum, Ishwar Khatiwada, Jacqui Motroni, Joseph McLaughlin, and Sheila Palma, Measuring High School Graduation and Dropout Rates in the Boston Public Schools: The Findings of Alternative Estimating Methodologies, Prepared for the Boston Private Industry Council, Youth Transition Funders Group, 2006.

<sup>6</sup> For an example of the use of such data in counseling at-risk youth,

See: Edward DeJesus, Makin' It: The Hip-Hop Guide to True Survival, Youth Development and Research Fund, 2002.

health, and other outcomes of high school dropouts and other educational groups are used to present our case.

Knowledge of both the magnitudes and sources of the personal and societal costs of dropping out of high school is important for a variety of reasons. First, the information on the personal economic benefits of staying in high school through graduation and completing some post-secondary schooling should be widely disseminated to junior high schools and high schools in Boston and other cities that experience above average dropout rates. The key findings on the labor market and lifetime earnings consequences of dropping out of high school can be packaged in highly readable formats for use in educating and counseling youth on educational and career options.<sup>7</sup> Second, local and state political leaders, educators, and educational policy makers should be made more fully aware of the size of the potential private and social benefits from improving high school graduation rates in making decisions about the future funding of dropout prevention and recovery efforts. Findings in this report clearly indicate that the economic and social benefits from successfully reducing dropout rates can be quite substantial. Third, the general public and the media need to be better informed about the various types of economic and social benefits, including taxpayer benefits, that can be generated by an increase in the number of high school students that will graduate with a regular diploma. More informed decision-making with respect to support for programs to bolster high school graduation rates should result from a better understanding of the potential benefits and costs of dropout prevention and recovery programs.

## **An Overview of the Report's Findings**

Our paper will begin with a brief review of recent high school dropout problems in the state of Massachusetts and the city of Boston for all public high school students and for selected gender, race-ethnic, and income subgroups. Our report's findings are based on a diverse and comprehensive array of data sources on Massachusetts teens and adults for varying time periods. Some of our estimates pertain to the city while others are statewide. Comparisons with findings for the nation as a whole also are presented. We will, thus, an overview of the sources of the data underlying all of the estimates appearing in this paper. This discussion of data sources will

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<sup>7</sup> For an example of the use of such data in counseling at-risk youth, See: Edward DeJesus, Makin' It: The Hip-Hop Guide to True Survival, Youth Development and Research Fund, 2002.

be followed by an examination of the employment experiences of young high school dropouts and graduates (16-19 years old) in Massachusetts and the U.S. in recent years, with some substate breakouts of the data for the city of Boston, the city of Springfield, Suffolk County and other counties across the state. The employment outcomes for teens will be supplemented with a more comprehensive examination of the employment rates of Massachusetts adults (16-64 years old) by educational attainment during 2005 together with comparisons with the U.S. Similar findings for adults 25 and older in the city of Boston and selected counties across the state also will be reviewed.

The employment analysis will be complemented by an examination of the annual earnings of Massachusetts adults (18-64 years old) by educational attainment in 2005 with separate breakouts of the findings for men and women, and comparisons of the findings for Massachusetts with those for the entire U.S. will be provided. The annual earnings data will be supplemented with estimates of the lifetime earnings of Massachusetts adults from ages 18-64 by their level of schooling in 2005. Findings will be presented for all adults in the 18-64 age group and for men and women separately. Trends in the lifetime earnings of Massachusetts men and women over the entire 1980-2005 period will be described and assessed. The very steep declines in the lifetime earnings of male high school dropouts over this 25 year period will be emphasized.

The findings on the annual and lifetime earnings of Massachusetts adults will be followed by a review of the income inadequacy problems of the state's adults who failed to graduate from high school. These inadequacy problems include the much higher incidence of poverty, near poverty, and low income problems among less educated adults over their work lives. These estimates of the incidence of income inadequacy problems will be provided for men and women separately.

Findings on the labor market and income consequences of dropping out of high school will be followed by an overview of the comparative health status of high school dropouts, their health insurance coverage rates, their ability to obtain health insurance coverage from their employers when working, their disability status, the severe labor market and income difficulties experienced by dropouts when they are disabled, and their more frequent dependence on some form of cash public assistance income to support themselves when they become disabled. The

incarceration status of Massachusetts high school dropouts, especially males, will be reviewed and compared to that of their better educated peers, and the higher annual and lifetime costs of institutionalization among dropouts will be estimated.

The civic behavior of young adults and all adults educational attainment will be examined. The voting behavior of young adults in recent elections and of Massachusetts adults in the 2004 Presidential election will be reviewed.

Given the higher rates of joblessness and the lower annual earnings of the state's high school dropouts when they are employed, one would anticipate that they would be more dependent on cash public assistance income and in-kind transfers (food stamps, rental subsidies, energy assistance, Medicaid) to support themselves and their families. To identify the degree to which high school dropouts and their better educated peers received various types of cash and in-kind transfers, we examined the findings of the 2005 ACS survey for Massachusetts and the U.S. Administrative data on the educational characteristics of the recipients of cash benefits under the Temporary Assistance to Needy Families (TANF) program were combined with data on the educational backgrounds of 18-45 year old women in the state to estimate the comparative incidence of TANF benefit recipiency among high school dropouts, high school graduates, and those adults with some post-secondary schooling in Massachusetts. A similar analysis was conducted for food stamp recipients.

The final section of the paper will present a series of findings on the fiscal impacts of various educational subgroups of 18-64 year olds in Massachusetts in terms of their payments of payroll and income taxes and their receipt of a comprehensive array of cash and in-kind benefits from the state and national government. The U.S. Census Bureau has provided estimates of annual tax payments and the value of cash and in-kind benefits received by individuals and households based on findings from the March CPS surveys. For each individual 18-64 years old, we have generated estimates of their net fiscal benefits to the state and federal government by adding all payments of Social Security payroll taxes, federal retirement contributions, and state and federal income taxes and subtracting the value of cash income transfers and key in-kind benefits (food stamps, rental subsidies, Medicaid and Medicare benefits, energy assistance). The mean values of these net fiscal benefits were calculated for 18-64 year old Massachusetts adults in each of five educational attainment categories during both 2002 and 2004. Results of our

analyses will reveal that high school dropouts are the only educational group with negative net fiscal benefits; i.e., they receive more in cash and in-kind benefits than they pay in combined payroll and federal and state income taxes. The lifetime fiscal costs to taxpayers of supporting high school dropouts in Massachusetts are quite substantial.

## **Recent Trends in High School Dropout Problems in Massachusetts and the City of Boston**

Knowledge of the numbers, demographic/ socioeconomic characteristics, academic proficiencies, and geographic locations of dropouts is indispensable for public policy efforts to reduce dropout problems. Official government estimates of high school dropout rates for Massachusetts and other states across the country reveal that the state has a below average high school dropout rate.<sup>8</sup> However, annual dropout problems in the state's public high schools have been increasing over the past few school years. Recently released estimates of the annual number of dropouts in grades 9-12 for Massachusetts reveal that 11,145 students or 3.8% of the total public high school enrollment dropped out of school in the 2004-05 school year.<sup>9</sup> This represents a near 20 percent increase in the number of dropouts from the 2000-2001 and 2002-2003 school years.

The incidence of high school dropout problems in the state tends to vary in intensity across demographic and socioeconomic subgroups of students as well as across cities, towns, and high schools within most large cities, including Boston. During the 2004-2005 school year, males accounted for just under 60 percent of all dropouts in the state's public high schools. The number of male dropouts also has been rising more rapidly than the number of female dropouts since the late 1990s (23% vs. 18%).<sup>10</sup> The rising incidence of dropout problems among males should be viewed as particularly troublesome given their growing labor market problems.

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<sup>8</sup> For an earlier review of alternative methodologies for estimating school dropout problems and estimates of high school dropout problems in both Boston and the state of Massachusetts, see: Andrew Sum, Joseph McLaughlin, Ishwar Khatriwada, and Jacqui Motroni, Measuring High School Graduation and Dropout Rates in the Boston Public Schools: The Findings of Alternative Estimating Methodologies, Report Prepared for the Boston Youth Transition Funders Group, Boston, 2005.

<sup>9</sup> See: (i) Massachusetts Department of Education, High School Dropouts 2004-05, Massachusetts Public Schools, Malden, 2006; (ii) Tony Lee, "High School Dropout Rate Highest Since '98," Boston Metro, December 5, 2006, p.1.

<sup>10</sup> These growth rate estimates were based on a comparison of the number of dropouts in the 2004-2005 school year with the average number of dropouts for the 1998-1999 and 1999-2000 school years.

Dropout rates in the past school year varied widely across major race-ethnic groups, ranging from lows of 2.6% among Asians and 2.8% among Whites to highs of 6.3% among Blacks and 9.1% among Hispanics. Black and Hispanic dropouts accounted for 41% of all public school dropouts during the 2004-2005 school year even though they represented only 20% of the state's public high school students. Low income students also were heavily over-represented in the ranks of recent high school dropouts. Their estimated annual dropout rate during the 2004-2005 school year was 6.4%, more than twice as high as that of non-low income students.<sup>11</sup>

Another recent development in the state dropout statistics is the sharp rise in the number of high school seniors who are leaving high school before obtaining a diploma. Their share of all high school dropouts in the state has risen from 18 to 19 percent in the late 1990s to 27 to 28 percent in the past two school years. A more detailed understanding of the causes of these rising dropout problems among high school seniors, including their inability to pass the state MCAS tests, is needed to guide future efforts to reduce dropout problems across the state. It would seem that efforts to improve the graduation rates of these high school seniors would be the most cost-effective of all dropout prevention efforts, given the amount of schooling that they have already completed prior to leaving high school.

Similar to findings for other central cities in the state, the estimated dropout rates for Boston public high school students in recent years have been considerably higher than those for the state as a whole. Estimates of Boston public school dropout rates based on the official dropout rate methodology of the state as a whole have yielded annual dropout rates ranging from 7.0% to 8.5% in recent years. This would imply a four year dropout rate of 28% to 34% over this time period. During the 2004-2005 school year, the dropout rate for the Boston public school district was 7.7%. The dropout rate of male high school students in Boston was nearly 1.5 times as high as that of females in Boston Public Schools in the 2004-2005 school year (9.0% vs. 6.2%). The dropout rate also varied considerably across race-ethnic groups in Boston public schools, ranging from a low of 2.9% among Asian high school students to highs of 8.2% and 8.6% among Black and Hispanic students, a race-ethnic pattern similar to that for the state. Dropout rates also differ considerably across high school in the Boston school district. During

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<sup>11</sup> See: Massachusetts Department of Education, "High School Dropouts 2004-05," 2006.

2004-2005, dropout rates ranged from lows of .2% and .4% among exam high schools to highs of 17% to 18% for some of the larger non-exam high schools.

## **Data Sources for the Analyses Appearing in the Report**

The analyses of the economic, labor market, income, health, social, civic, criminal justice, and fiscal consequences of dropping out of high school appearing in this report are based on a wide array of data sources. First, many of the employment and earnings measures for Massachusetts youth and adults as well as a number of the health-related disability measures are based on the findings of the American Community Surveys for 2005. The American Community Survey (ACS) is a national household survey conducted by the U.S. Census Bureau since 2000. During 2005, more than 34,000 households in Massachusetts completed an ACS questionnaire that collected detailed information on the demographic and socioeconomic characteristics of all household members, including their educational attainment and school enrollment status,<sup>12</sup> the employment status of all working-age adults (16 and older) at the time of the survey, their labor market experiences in the twelve month period prior to the survey, and their earnings and other sources of money income in the previous twelve months. The ACS survey data on the annual money incomes of families and the number/age distribution of family members can be used to identify the number of families and persons that are poor/near poor or low income.<sup>13</sup>

A second key source of data for the analysis was the March 2005 and March 2006 CPS surveys, including the work experience and income supplements. The March CPS surveys for these two years involved interviews with approximately 2,500 households in Massachusetts and 115,000 households across the country.<sup>14</sup> The monthly CPS household survey is conducted by the U.S. Census Bureau for the U.S. Bureau of Labor Statistics and is the source of the monthly

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<sup>12</sup> Respondents to the ACS survey were asked to identify whether they were enrolled in school at any time in the two month period prior to the survey. Persons who were not enrolled in school and who lacked a high school diploma/GED are classified as high school dropouts in this report. GED holders will be assigned to the high school graduate category if they did not complete any years of post-secondary schooling.

<sup>13</sup> The definition of a “low income family” in this report is that used by many poverty and welfare reform researchers across the country. It is a family with an annual income below two times the poverty line for a family of its given size and age composition. For a review of the poverty, low income, and selected other income thresholds used by poverty researchers to define income inadequacy, See: Garth Mangum, Stephen Mangum, and Andrew Sum, The Persistence of Poverty in the United States, Johns Hopkins University Press, Baltimore, 2004.

<sup>14</sup> For a review of the labor force concepts and measures underlying the monthly CPS household surveys, See: U.S. Bureau of Labor Statistics, Employment and Earnings, January 2006, “Appendix A,” U.S. Government Printing Office, Washington, D.C., 2006.

data on the nation's labor force, its employed, and unemployed populations. The March survey contains a supplementary set of questions that collect information on the self-reported health status of respondents, their health insurance coverage, their sources of income during the previous calendar year, and their receipt of various forms of cash and in-kind assistance from local, state, and national government agencies. With the available income and employment information, the U.S. Census Bureau imputes estimates of the amount of Social Security payroll taxes, federal retirement contributions, and state and federal income taxes paid by individuals during a given calendar year. These imputed tax and cash/in-kind transfer data for calendar years 2002 and 2004 are used to estimate the fiscal contributions of adults 18-64 years old in Massachusetts by their educational attainment level.

A third source of data is the public use micro records data (PUMS data) from the 2000 Census. The 2000 Census collected data on the demographic and educational backgrounds of inmates of institutions, including jails, juvenile detention centers, nursing homes, long stay hospitals, nursing homes, and state/federal prisons. The data on the age, gender, race-ethnic, and educational characteristics of inmates of institutions were used to estimate the incidence of institutionalization rates for a variety of educational attainment subgroups of adults in Massachusetts, with separate breakouts of the data by gender and age groups.

Fourth, the PUMS data from the 1980, 1990, and 2000 Censuses together with ACS data for 2005 were used to estimate changes over time in the lifetime earnings of 18-64 year old adults by educational attainment in Massachusetts. Findings will be presented for all Massachusetts adults and for men and women separately. Selected comparisons of the Massachusetts findings with those for the entire U.S. will be provided to place findings for our state in comparative perspective. A major emphasis will be placed on the steep deterioration in the lifetime earnings of Massachusetts adults without a high school diploma, especially men. Males with a high school diploma/GED but no post-secondary schooling also have experienced sharp declines in their expected lifetime earnings over the past few decades in both Massachusetts and the U.S. The economic costs of dropping out of high school for males are rising overtime.

Fifth, several administrative data sources, including a national/state data base on the educational characteristics of recipients of cash benefits under the Temporary Assistance for

Needy Families (TANF) program, were used to help identify the per cent of female adults in Massachusetts in selected educational attainment subgroups who were recipients of TANF benefits.<sup>15</sup> A similar set of administrative data on food stamp recipients was used to identify the educational characteristics of food stamp recipients around the state. The administrative data on the characteristics of TANF recipients were supplemented with findings from the 2005 ACS survey on the share of Massachusetts adults (18-64 years old) receiving various types of cash public assistance income, including Supplemental Security Income for the Aged and Disabled, Social Security disability, and Social Security retirement and survivors benefits.

A sixth set of data sources, including the 2000 National Education Longitudinal Survey (NELS) and the November 2004 CPS survey, were used to identify voting rates of young adults and voter eligible U.S. adults in recent presidential elections by educational attainment. A few other measures of volunteerism were obtained from the American Time Use Survey conducted by the U.S. Census Bureau.

A seventh source of data that was used in conducting this study was an administrative data base of the Massachusetts Department of Corrections. These data bases provided information on the numbers of individuals who were inmates of jails and prisons across the state in recent years and the annual costs of housing an inmate in jail or prison. These cost data were used to estimate the higher lifetime incarceration costs associated with adult dropouts in the state of Massachusetts in comparison to those of their better educated counterparts, especially among males who dominate the ranks of the jail/prison population in the state.

## **The Labor Market for Out-of-School Teens and Young Dropouts in Massachusetts in 2005**

The difficulties faced by the nation's out of school teens in securing employment, especially in major central cities and high poverty urban areas, have intensified since the end of the national labor market boom in early 2001, and they should be viewed as a troublesome matter by state and local educational and workforce development policymakers.<sup>16</sup> However, it is

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<sup>15</sup> The data on the educational characteristics of TANF recipients in Massachusetts were provided by the U.S. Department of Health and Human Services' Administration for Children and Families, Washington, D.C.

<sup>16</sup> For a review of the deteriorating labor market fortunes of teens and young adults in the U.S. with limited schooling,

See: (i) Peter Edelman, Harry J. Holzer, and Paul Offner, Reconnecting Disadvantaged Young Men, Urban Institute Press, Washington, DC, 2006; (ii) Andrew Sum, Ishwar Khatiwada, and Abbe Will, The Decline in Work

important to distinguish between the fates of two educational subgroups of out-of-school teenagers: those out-of-school youth that possess a high school diploma/GED certificate and those who left high school without a diploma. The labor market conditions faced by each of these two subgroups of out of school teenagers are typically quite different, with dropouts facing a more hostile environment and increased competition from young foreign immigrants, especially illegals, in recent years.

We have analyzed recent data from the American Community Surveys (ACS) for 2004 and 2005 to assess the labor market situation of out of school 16 to 19 year olds in the state of Massachusetts and in selected counties and cities, including the city of Boston and the city of Springfield.<sup>17</sup> Comparisons with labor market outcomes for their teenaged counterparts across the nation also will be provided. In this section of the paper, we both identify and analyze the employment/population ratios of all out of school teens, high school graduates, and high school dropouts in 2005.<sup>18</sup> The E/P ratio represents the ratio of the number of teens who were employed at the time of the ACS survey to the number of teens in the civilian non-institutional population who were living in private households.<sup>19</sup> The advantage of using the E/P ratio as a core measure of the labor market situation among teens is that in an unfavorable labor market, such as the one recently faced by teenagers in the nation's central cities and high poverty urban areas, jobs for teens become more difficult to obtain. As a result of these depressed labor market conditions, some of these teens will stop actively looking for work and will no longer be counted among the ranks of the official unemployed even though they remain jobless. Their absence from the ranks of the employed, however, will be captured by a decline in their employment/population ratio.

Some youth development and labor market analysts argue that one of the reasons why 16-19 year olds drop out of school is to secure a source of income and work.<sup>20</sup> However, when looking at our estimates of employment to population ratios for out of school 16 to 19 year olds,

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Experience Opportunities among Massachusetts and U.S. Teens (16-19) between 2000 and 2003-2004: Implications for Youth Workforce Development Policy, Report Prepared for the Commonwealth Corporation, April 2006.

<sup>17</sup> In order to provide more reliable estimates of the employment to population ratios of youth at the local level in the state of Massachusetts, we have taken a two year average of the data from the 2004 and 2005 ACS surveys.

<sup>18</sup> A high school dropout is a youth who was not enrolled in school and who did not hold either a regular high school diploma or a GED certificate.

<sup>19</sup> The ACS survey did not interview teens living in group quarters or institutions, such as college dormitories, juvenile homes, teen mother facilities, jails, or prisons.

<sup>20</sup> For a recent review of reasons for dropping out and causes of school dropout problems see: Rumberger, Russell W., "Why Students Drop Out of School", in Dropouts in America: Confronting the Crisis, edited by Gary Orfield, Harvard Education Press, Cambridge, 2004.

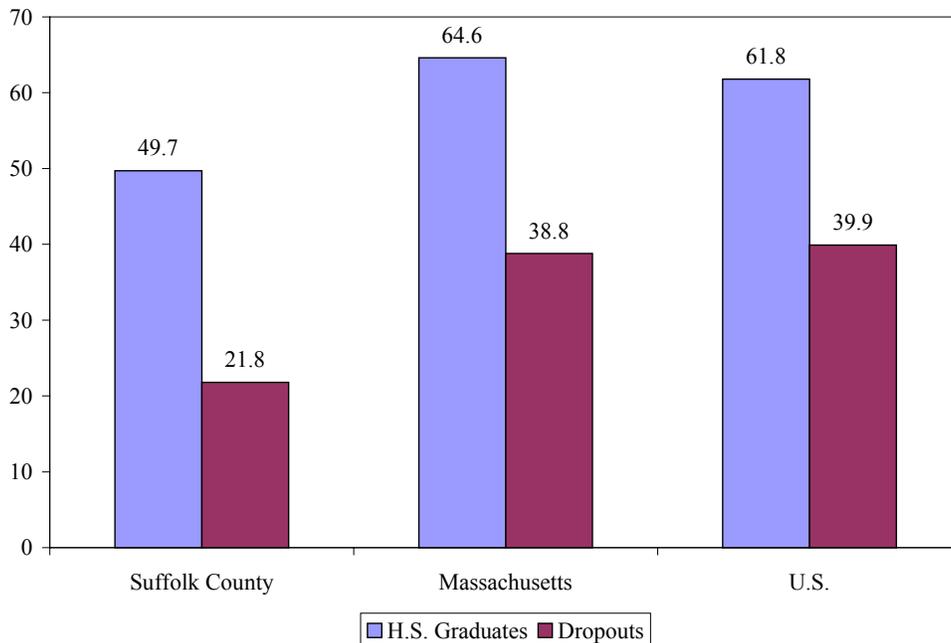
there are considerable differences between the employment rates of out of school youth with a high school diploma and those without a high school diploma or a GED (Table 1 and Chart 1). Only a small minority of teenaged dropouts were successful in finding any type of work, especially in Suffolk County, the city of Springfield, and the city of Boston where only 1 of 5 dropouts were able to obtain some employment in 2005.

Table 1:  
Employment to Population Ratios of Out of School 16 to 19 Year Olds by  
Educational Attainment in the U.S., the State of Massachusetts, City of Boston,  
City of Springfield, and Suffolk County, 2004-2005 Averages  
(in %)

Geographic Area	(A) Total Out of School	(B) H.S. Graduates	(C) H.S. Dropouts
U.S.	52.7	61.8	39.9
Massachusetts	54.1	64.6	38.8
Suffolk County	39.1	49.7	21.8
Boston city	44.2	65.2	20.0
Springfield city	34.9	54.0	24.0

Source: 2004 and 2005 American Community Surveys, public use files, tabulations by authors.

Chart 1:  
Employment to Population Ratios of Out of School 16 to 19 Year Olds by Educational  
Attainment in Suffolk County, Massachusetts, and the U.S., 2004-2005 Averages  
(in %)



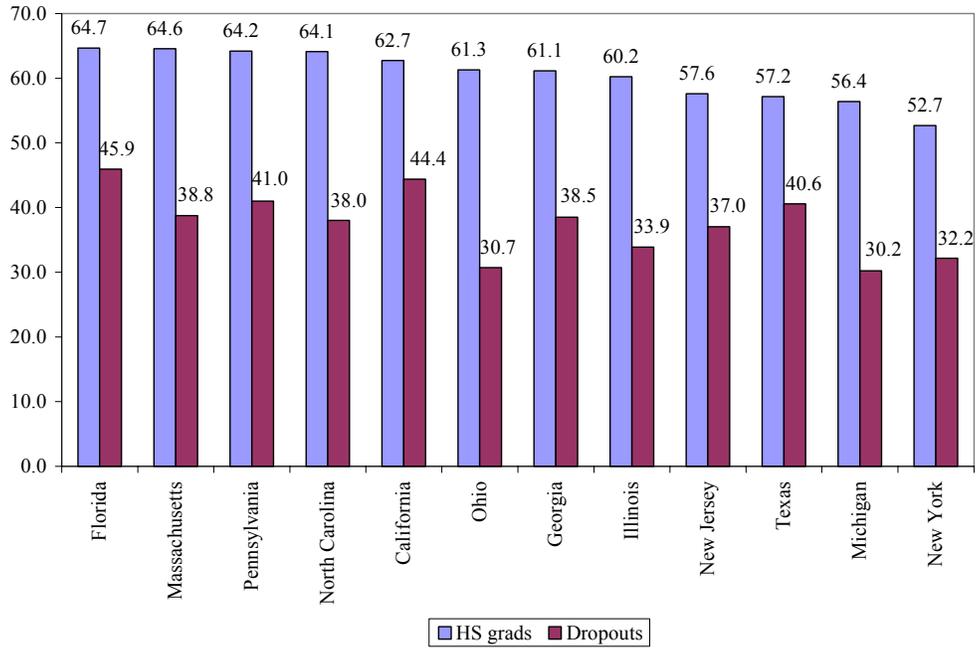
The employment rate of all out-of-school teens (16-19 years old) in the U.S. during 2005 was just under 53 percent. (Table 1) However, during 2005, the E/P ratios of the nation's out of school teens varied quite considerably across educational attainment groups. Teenaged high school graduates in the U.S. were substantially more likely to be employed than their dropout counterparts, 62 percent versus 40 percent. A similar pattern of findings is observed at the state and local level for teens in Massachusetts. Similar to developments in other states, teens and young adults in Massachusetts were severely affected by the deterioration in state labor market conditions from early 2001 through 2004, particularly out of school teens and young adults with no post-secondary schooling.<sup>21</sup> In the state of Massachusetts, about 65 percent of out-of-school teenagers with a high school diploma were employed during 2005, compared to only 38 percent of teenaged dropouts. Among the twelve largest states in the U.S., the Massachusetts employment to population ratio for out-of school teens with a high school diploma in 2004-2005, ranked as the second highest (65%)<sup>22</sup>. The E/P ratios of out school high school graduates in the twelve biggest states ranged from highs of 65% in Florida and Massachusetts to lows of 56 and 53 percent in Michigan and New York, respectively (Chart 2). However, the E/P ratio of teen dropouts in Massachusetts during the same time period ranked only as the fifth highest (39%) among the twelve largest states in the U.S. Among the 12 most populous states in the U.S., Florida (46%) and California (45%) were the states with the highest E/P ratios for teen dropouts. It should be noted, however that, the high E/P ratios registered by teen dropouts in Florida and California are influenced by a large number of recent teen immigrants. On the other end of the distribution, the states with the lowest E/P ratios for teen dropouts were Ohio and Michigan where only 30% of them were able to obtain a job on average during 2004 and 2005.

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<sup>21</sup> See: Ishwar Khatiwada, Andrew Sum and Joseph McLaughlin, Young High School Dropouts in Boston: A Profile of Their Demographic and Socioeconomic Characteristics and Their Labor Market Experiences and Problems, paper prepared for the Private Industry Council, Boston, Massachusetts, October 2005.

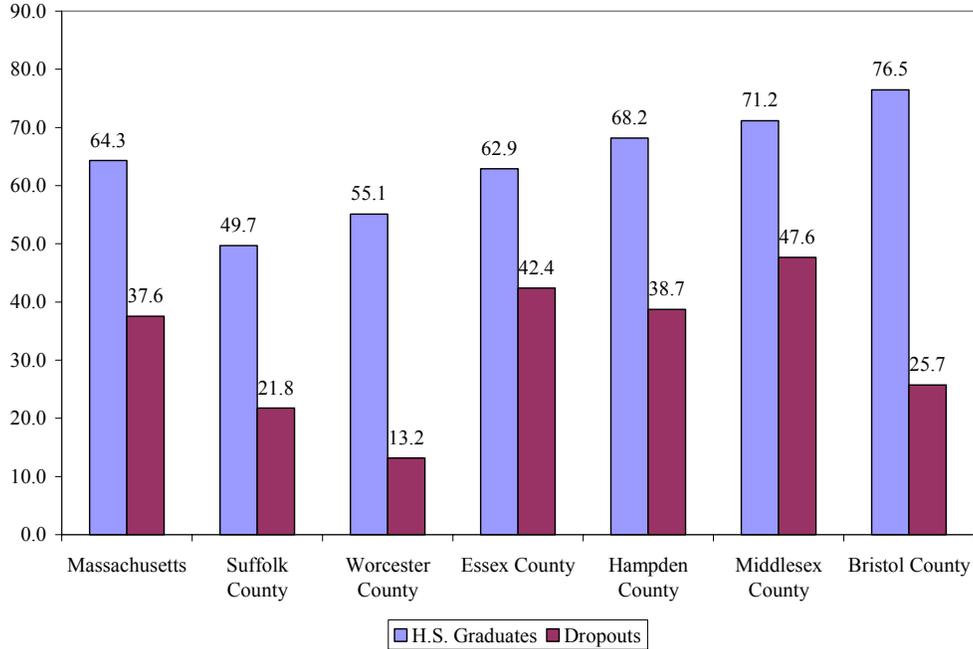
<sup>22</sup> The estimated E/P ratio for teenage high school graduates in Massachusetts in 2004-2005 was statistically identical to that of the top 4 states.

Chart 2:  
Employment to Population Ratios of Out of School 16 to 19 Year Olds by Educational  
Attainment, 12 Largest States in the U.S., 2004-2005



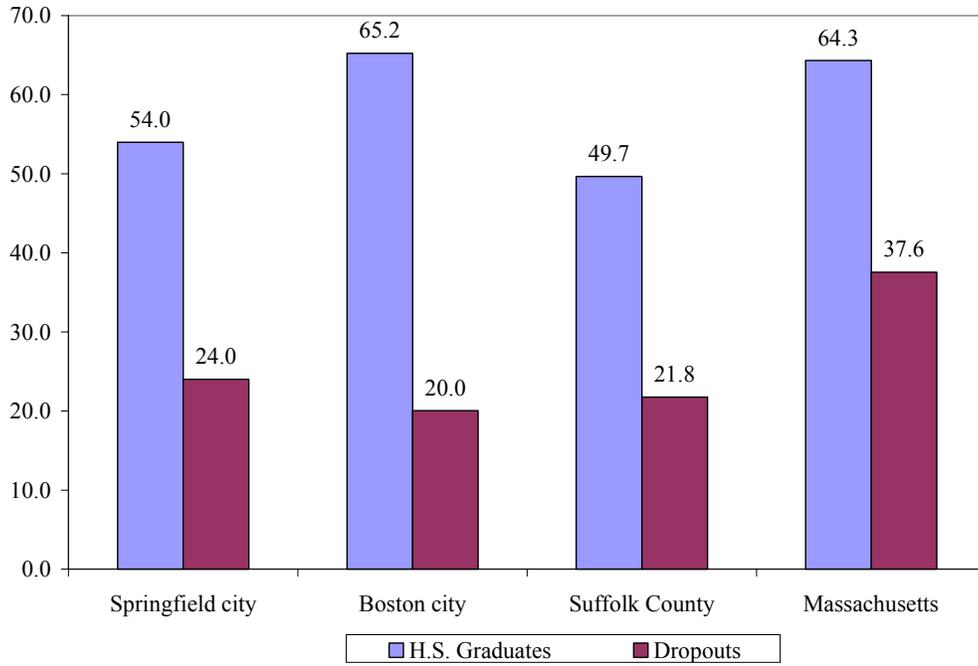
At the county level, teen employment rates varied widely in our state. In Suffolk County and Worcester County, out of school teens fared far worse than their state and national counterparts, especially dropouts. For example, in Suffolk County, only 22 per cent of teen dropouts were employed, and in Worcester County the E/P ratio of teen dropouts (13 per cent) was even lower than in Suffolk County. In each of the six counties for whom data were available, high school graduates fared considerably better than dropouts in obtaining some type of employment in recent years.

Chart 3:  
Employment to Population Ratios of Out of School 16 to 19 Year Olds by  
Educational Attainment in Massachusetts Counties, 2004-2005 Averages  
 (in %)



As noted earlier, out-of-school teenagers living in large central cities and high poverty neighborhoods typically have faced considerably more depressed labor market conditions. For example, in the city of Boston between 2004 and 2005, only 20 percent of teen dropouts were employed, an E/P ratio only half as high as that prevailing among their national counterparts during the same time period. This finding implies that 80 of every 100 16-19 year old dropouts in the city of Boston were jobless. A similar result is found for teen dropouts in the city of Springfield during 2004 and 2005. In Springfield, only 24 percent of teen dropouts were employed during the same time period. High school graduate teens living in the city of Boston and the city of Springfield had much higher E/P ratios than their dropout counterparts (65 % and 54% respectively). In these two cities, teens who graduated from high school with a regular diploma were two to three times as likely to be employed as their peers who dropped out of high school.

Chart 4:  
Employment to Population Ratios of Out of School 16 to 19 Year Olds by Educational  
Attainment in the State of Massachusetts, City of Boston, City of Springfield, and Suffolk  
County, 2004-2005 Averages  
(in %)



### **The Employment Rates of 16-64 Year Olds in Massachusetts by Their Educational Attainment**

Similar to the situation for their better educated peers, the employment rates of high school dropouts in Massachusetts tend to rise steadily with age as they leave their teen years, but they tend to peak quite early (in the 30-34 age range) and fall well below those of high school graduates and their counterparts with some post-secondary schooling over their entire working lives (Chart 5 and Table 2). In Massachusetts, the E/P ratio of teenaged dropouts was only 45% in 2005 but it rose steadily to 59% among 20-24 year olds and to 68% among 25-29 year olds when it peaked. The E/P ratios of adult dropouts fell fairly steadily and steeply after age 30 and declined to 42% for those in the 55-64 age group (Chart 5). The employment rates of high school graduates in Massachusetts did not peak until their late 40s to early 50s. For each age group, high school graduates were considerably more likely to be employed than high school dropouts in 2005, with all of these gaps but one being in the double digit range and often close to 20 percentage points.

Chart 5:  
Employment Rates of 16-64 Year Old High School  
Dropouts in Massachusetts by Age Group, 2005

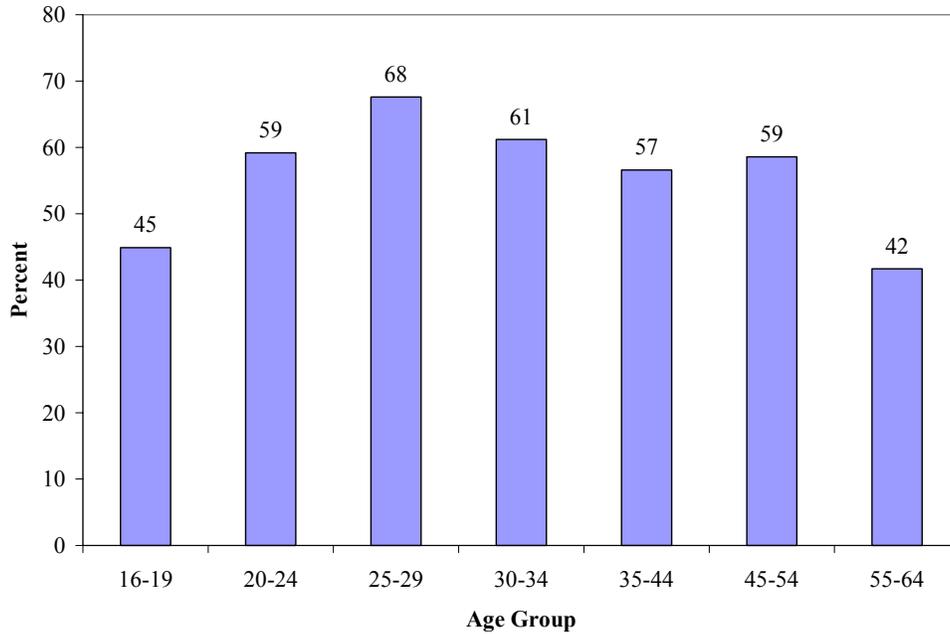


Table 2:  
Employment Rates of 16-64 Year Old Adult Dropouts and High School  
Graduates by Age Group in Massachusetts, 2005  
 (in %)

Age Group	(A)	(B)	(C)
	High School Dropouts	High School Graduates	Graduates Minus Dropouts
16-19	44.9	67.2	+22.3
20-24	59.2	75.1	+15.9
25-29	67.6	77.0	+9.4
30-34	61.2	74.6	+13.4
35-44	56.6	75.9	+19.3
45-54	58.6	77.1	+18.5
55-64	41.7	61.9	+20.2

Source: 2005 American Community Surveys, public use files, tabulations by authors.

For the 16-64 year old age cohort as a whole, the employment rates of Massachusetts adults rise steadily and strongly with their educational attainment (Table 3). The employment rate of adults lacking a high school diploma or a GED was only 55% in 2005 versus 73% for high school graduates, nearly 78% for those with 1-3 years of college, 82% for those with a

Bachelor’s degree, and 86% for those with a Master’s or higher degree (Table 3 and Chart 6). Female dropouts fared considerably worse than their male counterparts in finding employment in the state in 2005 with only 45 of every 100 female adult dropouts being employed versus 64 of every 100 male dropouts. The low employment rates of female adult dropouts substantially increase their exposure to poverty and other income inadequacy problems over their entire work lives. Adult female dropouts are much less likely to be married than their better educated peers and frequently become single mothers, placing their children at a variety of risks of developmental problems.

Table 3:  
Employment Rates of 16-64 Year Old Adults in  
Massachusetts by Educational Attainment and Gender, 2005  
(in %)

	(A)	(B)	(C)
Educational Attainment	All	Men	Women
<12 or 12, no diploma/GED	55.2	63.6	44.8
H.S. diploma/GED	73.4	79.7	66.2
13-15 years	77.6	83.6	72.7
BA degree	82.0	88.8	75.8
Master’s or higher degree	86.0	90.0	82.2

Source: 2005 American Community Surveys, public use files, tabulations by authors.

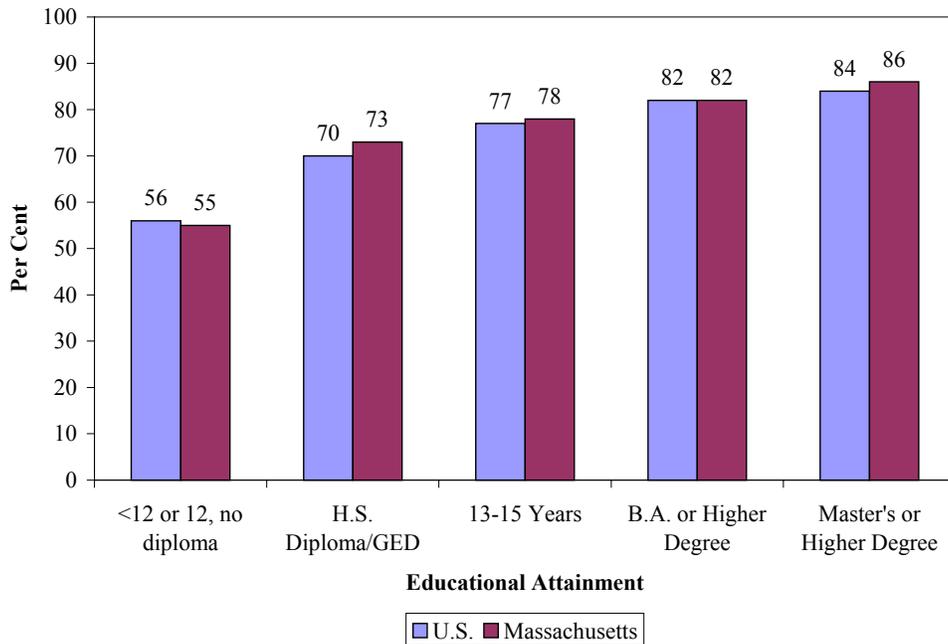
The patterns of adult employment rates by educational attainment in Massachusetts and the U.S. were nearly identical during 2005 (Chart 6). In both areas, only 55 to 56 per cent of those adults lacking a high school diploma/GED were employed versus employment rates at or above 70 per cent for high school graduates and 82 per cent for those holding a Bachelor’s degree. As a consequence of their lower employment rates, less educated adults acquire less cumulative work experience than their better educated peers over their work lives. They will work 25% fewer hours than high school graduates and one-third fewer hours than college graduates over their work lives. These years of cumulative work experience are a valuable form of human capital that increases the weekly wages of workers, thereby providing them with a greater economic incentive to work more hours.<sup>23</sup> A “Catch 22” phenomenon is at play here –

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<sup>23</sup> Longitudinal research at the national level indicates that less educated women also receive lower economic returns from their years of work experience than their better educated peers.

less work today reduces future wages and lower future wages reduce the incentive to work tomorrow.

Chart 6:  
Employment Rates of 16-64 Year Olds in Massachusetts and  
the U.S. by Educational Attainment, 2005  
(in %)



The absolute sizes of the percentage points gaps between the employment rates of high school dropouts in Massachusetts and those of their better educated counterparts are quite large, and they widen as the educational attainment of the group being compared with dropouts increases (Table 4). In 2005, the employment rate of 16-64 year old dropouts in the state was 18 percentage points below that of high school graduates and more than 21 percentage points below that of adults completing 1-3 years of college. The absolute size of the gaps between the employment rates of dropouts and high school graduates was quite substantial for both men and women (16 and 17 percentage points, respectively). The considerably lower employment rates of female dropouts in Massachusetts reduce their annual earnings and family incomes, thereby placing them at considerably greater risk of income inadequacy problems and being far more dependent on cash income and in-kind transfers from the state and federal governments to

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See: Helen Connolly and Peter Gottschalk, Returns to Tenure and Experience Revisited – Do Less Educated Workers Gain Less from Work Experience?, Boston College, Economics Department, Chestnut Hill, 2000.

support themselves. Findings on both of these issues for Massachusetts adults will be presented in a following section of this report.

Table 4:  
Percentage Point Differences Between the Employment Rates of  
16-64 Year Old High School Dropouts and High School Graduates/  
Adults with 1-3 Years of College in Massachusetts, 2005

	(A)	(B)	(C)
Groups Being Compared	All	Men	Women
High School Dropouts vs. High School Graduates, No College	18.2	16.1	17.4
High School Dropouts vs. Adults With 1-3 Years of College	21.4	20.0	28.0

Source: 2005 American Community Surveys, public use files, tabulations by authors.

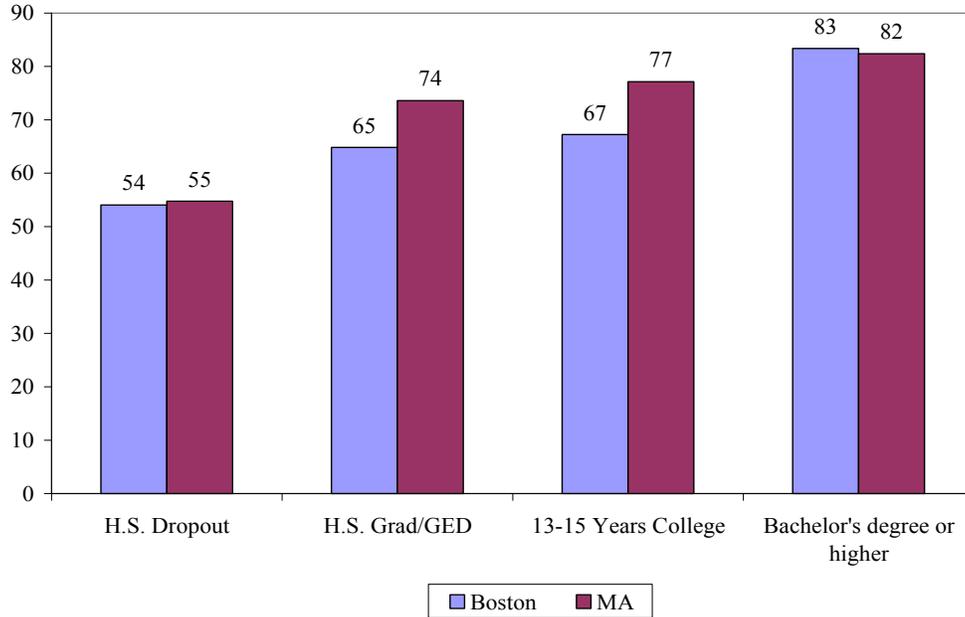
### **The Labor Market for 25-64 Year Olds in Selected Substate Areas of Massachusetts by Educational Attainment in 2005**

To examine how older adults in various educational attainment groups have fared in the labor markets of the city of Boston and selected Massachusetts counties in 2005, let us turn to an analysis of employment rates of Massachusetts 25 to 64 year old adults. The employment rates of 25-64 year olds in Massachusetts and the city of Boston in 2005 rose strongly with the amount of formal schooling that they had completed. The E/P ratios of these adults ranged from lows of 54% and 55% in Boston and Massachusetts, respectively, for those 25-64 adults lacking a high school diploma to highs of 83% in Boston and 82% in Massachusetts for those 25-64 year olds holding a bachelor's or higher degree. Similar E/P ratios for 25-64 year olds in Boston and Massachusetts are found for those educational attainment groups located at both ends of the educational distribution, i.e., H.S. dropouts and those with a Bachelors or higher degree (Chart 7). However, Massachusetts adults (25-64 years old) with a high school diploma and those with 13-15 years of college were considerably more likely to be employed than their counterparts residing in the city of Boston. Employment rates in the city of Boston were considerably lower for adults with only 12 to 15 years of schooling.<sup>24</sup>

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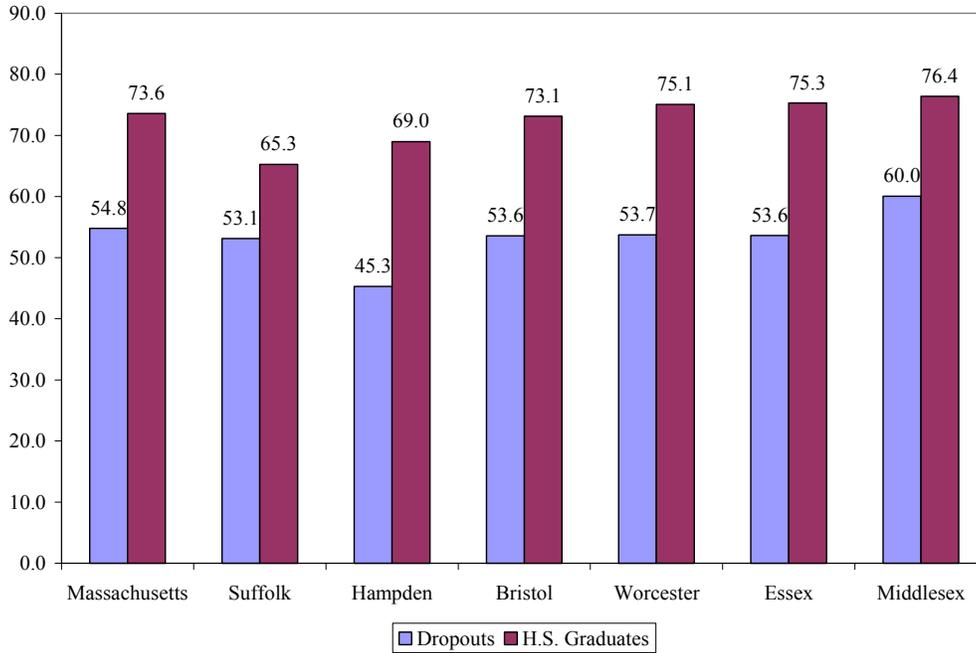
<sup>24</sup> The city of Boston lost a very considerable number of wage and salary jobs between 2000 and 2005. The sharp job losses likely contributed for a weakening of employment rates for adults with only a high school diploma or a few years of post-secondary schooling.

Chart 7:  
Employment to Population Ratios of 25 to 64 Year Olds in the  
City of Boston and Massachusetts by Educational Attainment, 2005  
(in %)



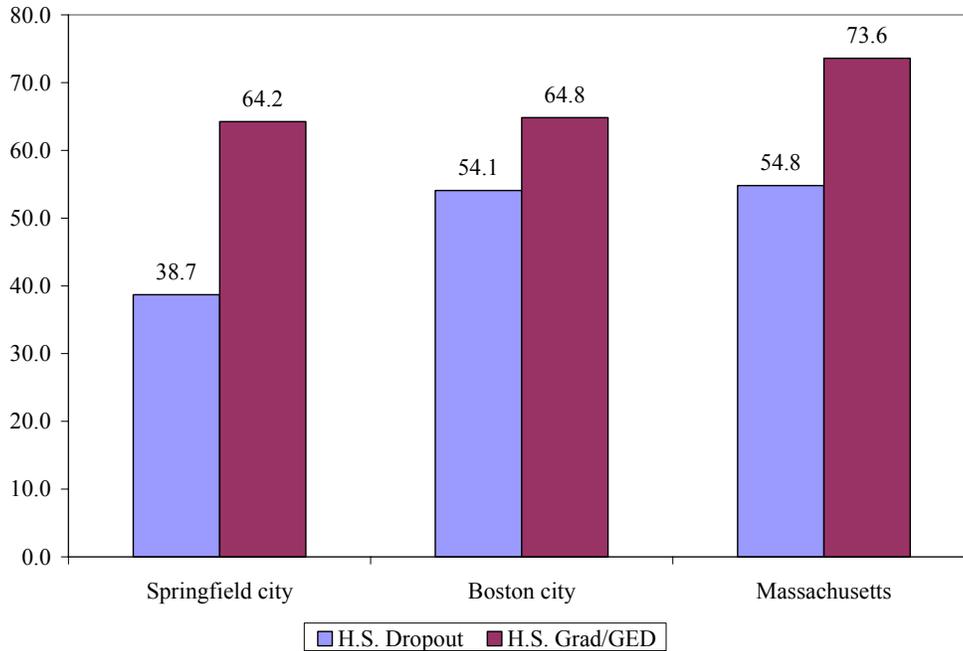
ACS data on the employment rates of adults are available for a selected number of counties in the state during 2005. At the county level, the E/P ratios of 25-64 year old high school dropouts and those with a high school diploma varied somewhat in our state. In Suffolk County, 53% of 25-64 year old dropouts were employed, while in Hampden County the E/P ratio (45%) of these same adult dropouts was lower than in Suffolk County. Adult dropouts living in Middlesex County had the highest E/P ratio (60%) across the six counties included in our analysis. Similar to our earlier findings for out of school teens, 25-64 year old high school graduates fared considerably better than their adult dropout counterparts in securing some type of employment in 2005, with the size of these employment rate differences ranging from 12 to 24 percentage points in these six counties of the state.

Chart 8:  
Employment to Population Ratios of 25 to 64 Year Old Dropouts and  
H.S. Graduates in Massachusetts Counties, 2005  
(in %)



Among the cities for which the 2005 ACS survey provides employment data, we included in our analysis the city of Boston and the city of Springfield. In the city of Springfield during 2005, only 39% of 25-64 year old dropouts were employed while in the city of Boston and Massachusetts the employment rates of adult 25-64 year old dropouts ranged between 53% and 55% during the same year. (Chart 9) Adults with a high school diploma living in the city of Boston and the city of Springfield had considerably higher E/P ratios than their dropout peers. In Springfield, the E/P ratio of high school graduates was nearly 26 percentage points higher than that of adult dropouts versus an 11 percentage point difference between these two groups in the city of Boston. When they were employed, high school graduates were also more likely to work full-time than their peers who lacked a diploma or a GED.

Chart 9:  
Employment to Population Ratios of 25 to 64 Year Old Dropouts and  
H.S. Graduates in Massachusetts, the City of Boston, and the City of Springfield, 2005  
 (in %)



### **The Annual Earnings of Massachusetts Adults by Educational Attainment, 2004-2005**

The most comprehensive measure of the labor market success of adults during an entire year is their annual earnings, which are influenced by the number of paid weeks of employment, average weekly hours of work, and hourly earnings. The 2005 ACS survey collected data from each working-age individual on their annual earnings from paid employment, including self-employment, during the twelve month period immediately preceding the date of the ACS questionnaire’s completion.<sup>25</sup> The annual earnings data for all 18-64 year olds, including those with no paid employment, in each of the following five educational attainment groups were analyzed to estimate mean annual earnings for all Massachusetts adults and for men and women separately.<sup>26</sup>

<sup>25</sup> The timing of this twelve month period will vary somewhat from one individual to another since the ACS questionnaires were completed by respondents throughout the calendar year.

<sup>26</sup> Those 18-24 year olds who were enrolled in high school or college at the time of the 2005 ACS survey were excluded from the earnings analysis.

- <12 or 12 years, no diploma or GED certificate
- High school diploma/GED, no post-secondary schooling
- 13-15 years, including Associate degree holders
- Bachelor’s degree holders
- Master’s or higher degree holders

The mean annual earnings of all Massachusetts adults 16-64 years old in 2004-2005 including non-earners were \$38,998 (Table 4). The mean annual earnings of adults increased steadily and strongly with their educational attainment, ranging from a low of \$16,762 among high school dropouts, to slightly over \$26,000 for high school graduates, to nearly \$30,900 for those with 1-3 years of college, and to a high of just under \$74,600 for those adults with a Master’s or higher degree (Table 5). The mean annual earnings of high school dropouts were approximately \$9,250 or 36% below those of high school graduates and more than \$34,000 or nearly 70% below those of their peers with a Bachelor’s degree (Table 6).

Table 5:  
Mean Annual Earnings of 18-64 Year Old Adults in Massachusetts by  
Educational Attainment and Gender, including Zero Earners, 2005

	(A)	(B)	(C)
Educational Attainment	All	Men	Women
<12 or 12, no diploma or GED	\$16,764	\$21,554	\$10,847
H.S. diploma/GED	26,013	33,638	17,524
13 – 15 years, including Associate’s degree	30,909	39,263	24,111
Bachelor’s degree	50,887	68,435	35,371
Master’s or higher degree	74,562	96,578	53,982
All	38,998	50,082	28,372

Source: 2005 American Community Surveys, public use files, tabulations by authors.

The mean annual earnings of Massachusetts male adults were nearly 77% higher than those of women (\$50,082 versus \$28,372), reflecting a combination of higher mean annual hours of employment among men than women and higher hourly earnings. For adults in both gender groups, however, mean annual earnings increased consistently and substantially by years of schooling completed. Male dropouts obtained mean annual earnings of \$21,554 which were \$12,084 or nearly 36% below those of their male counterparts with a high school diploma/GED, and they were nearly \$47,000 or 69% below those with a Bachelor’s degree (Tables 5 and 6).

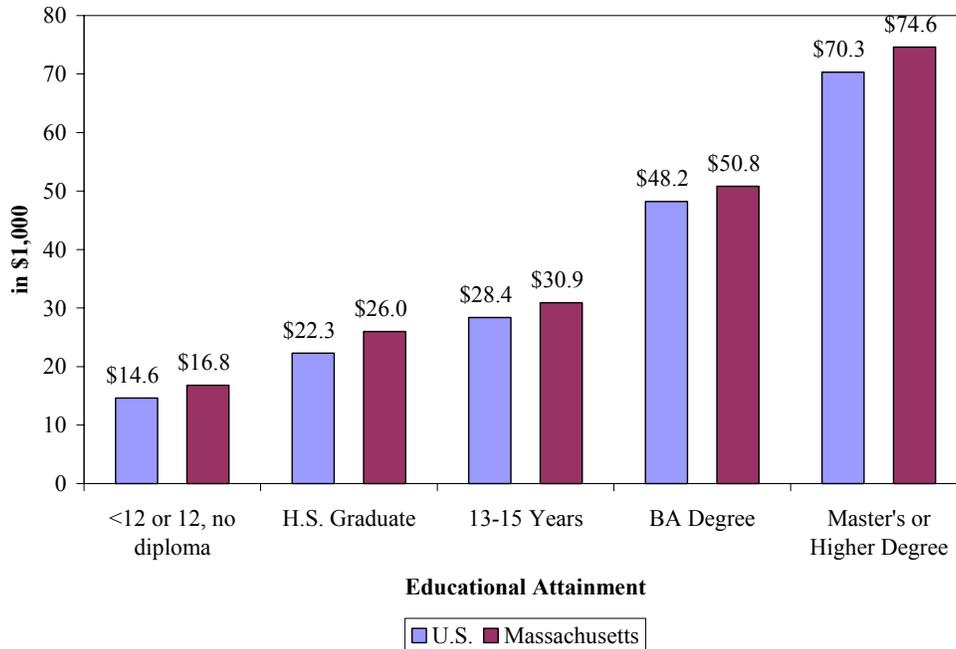
Among women, the mean annual earnings of high school dropouts were only \$10,872, reflecting a combination of both their low rate of employment during the year and their low annual earnings while employed. Adult female dropouts earned nearly \$6,700 or 38% less than their peers with a high school diploma, and their mean annual earnings were \$24,500 or 69% below those of their female peers who obtained a Bachelor’s degree.

Table 6:  
Absolute and Relative Size of the Estimates Differences Between the  
Mean Annual Earnings of 18-64 Year Old High School Dropouts in Massachusetts and Their  
Peers with High School Diplomas or Bachelor Degrees, All and by Gender, 2005

Educational Groups Being Compared	<b>All</b>		<b>Men</b>		<b>Women</b>	
	(A)	(B)	(A)	(B)	(A)	(B)
	Absolute	Percent	Absolute	Percent	Absolute	Percent
High School Dropout vs. Graduate	-\$9,249	-36%	\$12,084	-36%	-\$6,677	-38%
High School Dropout vs. Bachelor Degree Holder	-34,120	-69%	+46,881	-69%	-24,524	-69%

The size pattern of the mean annual earnings of Massachusetts adults by educational attainment was quite similar to that of their U.S. counterparts during 2005. Massachusetts adults obtained higher mean annual earnings than their U.S. peers in each educational attainment category, with the size of these mean annual differences in favor of Massachusetts adults ranging from \$2,200 among high school dropouts to \$4,300 among high school graduates and those with a Master’s or higher degree. In both geographic areas, adults with a high school diploma/GED obtained mean annual earnings between \$7,700 and \$9,200 higher than those without a high school diploma, and adults with 1-3 years of college obtained mean annual earnings that were nearly twice as high as those of adults without a diploma. There are very large earnings differences between these various educational groups, with adult dropouts lagging far behind their better educated peers.

**Chart 10:**  
**Comparisons of the Mean Annual Earnings of 18-64 Year Old**  
**Adults by Educational Attainment in the U.S. and Massachusetts, 2005**  
 (in \$1,000)



### Mean Lifetime Earnings of Massachusetts Adults by Educational Attainment and Gender

As the above findings have revealed, adults lacking high school diplomas have faced bleak employment and earnings prospects in Massachusetts during recent years. The labor market fortunes of these high school dropouts, especially males, also have been deteriorating over the past few decades and are likely to remain quite precarious in the immediate future. Over their working lives, adult dropouts will obtain earnings considerably below those of their better educated peers. To illustrate the likely magnitude of these lifetime earnings losses from limited schooling, we have calculated the expected, mean lifetime earnings of Massachusetts adults in six educational subgroups. Our estimates of mean lifetime earnings were calculated by first estimating the mean annual earnings of all persons in a given educational group (e.g., high school dropouts) for each single age from ages 18 to 64 (Table 7).<sup>27</sup> These earnings estimates for each age group are then summed over this 47 year period to calculate expected mean lifetime

<sup>27</sup> Our lifetime earnings estimates exclude individuals 18-22 years of age who were enrolled in school at the time of the 2005 ACS surveys. Otherwise, all individuals in a given age group are included in the calculations of the mean annual earnings estimates even if they had no paid employment during a given year.

earnings for each educational group in Massachusetts as of 2005. These cross-sectional lifetime earnings estimates are based on the assumption that the size of the mean annual earnings observed for persons in a given age and educational group in 2005 will prevail in the future as today's workers reach that age group. Given past declines in the real annual earnings of many Massachusetts adults with no post-secondary schooling, especially males, these assumptions of stable future earnings for workers with 12 or fewer years of schooling are likely quite optimistic.

Table 7:  
Estimating the Expected Mean Lifetime Earnings of  
High School Dropouts in Massachusetts from Ages 18-64  
 (Both Sexes Combined in 2005 Dollars)

Age Group	Mean Earnings
18	$X_{18}$
19	$X_{19}$
20	$X_{20}$
⋮	⋮
62	$X_{62}$
63	$X_{63}$
64	$X_{64}$
	64
18-64	$\sum_{i=18} X_i$
	$i = 18$

Estimates of expected mean lifetime earnings for Massachusetts adults in six educational groups are displayed in Tables 8 and Chart 11. The lifetime earnings estimates are provided for all Massachusetts adults (18-64) and for men and women separately. The mean lifetime earnings for all Massachusetts adults from ages 18-64 were estimated to be \$1.780 million as of 2005 (Table 7). These mean lifetime earnings estimates varied considerably across the six educational groups, ranging from a low of \$765,000 among adults lacking a high school diploma/GED, to \$1.221 million among high school graduates, to \$2.203 million among Bachelor degree holders, and to a high of nearly \$3 million among adults with a Master's or higher degree (Table 8 and Chart 11). The mean lifetime earnings of high school graduates in Massachusetts exceeded those of high school dropouts by \$456,000 (Table 9), Associate degree holders were characterized by mean lifetime earnings \$280,000 higher than those of high school graduates, and Bachelor

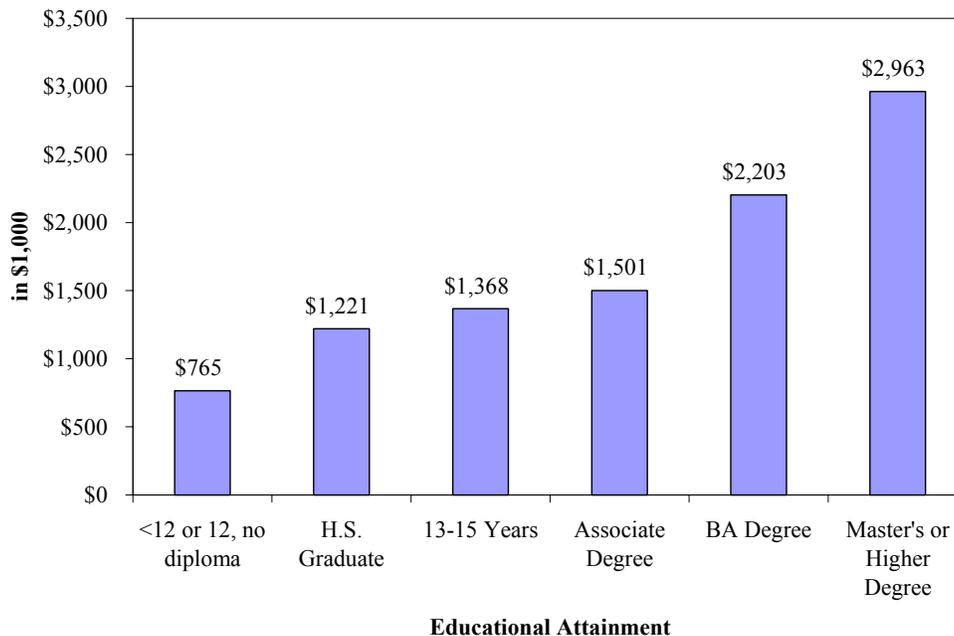
degree holders had mean lifetime earnings that were nearly one million above those of high school graduates. The average adult bachelor degree holder in Massachusetts would be expected to obtain nearly three times the mean amount of earnings of a high school dropout over his/her working lifetime (\$2.03 million versus \$765,000).

**Table 8:**  
**Mean Lifetime Earnings of 18-64 Year Old Massachusetts**  
**Adults by Educational Attainment and Gender**  
 (in \$1000s of 2005 Dollars)

	(A)	(B)	(C)
Educational Attainment	All	Men	Women
<12 or 12, no diploma	\$765	\$980	\$501
H.S. diploma/GED	1,221	1,581	826
13-15 years, no degree	1,368	1,792	980
Associate's degree	1,501	1,930	1,180
Bachelor's degree	2,203	2,921	1,536
Master's higher degree	2,963	3,743	2,158
All	1,780	2,295	1,292

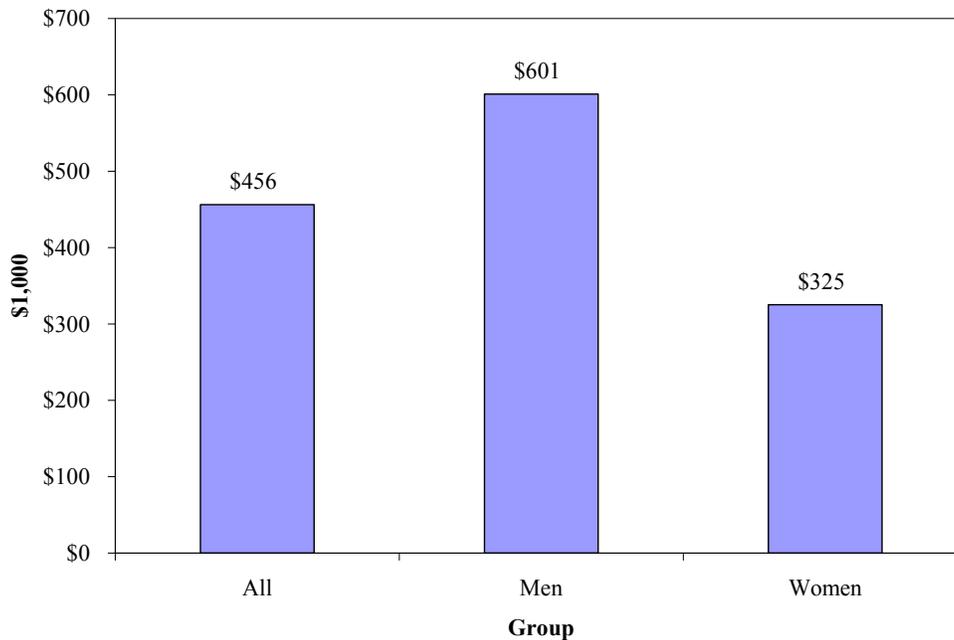
Source: 2005 American Community Surveys, public use files.

**Chart 11:**  
**Mean Lifetime Earnings of 18-64 Year Old Massachusetts Adults by Educational Attainment**  
 (in 1000s of 2005 Dollars)



The size patterns of the expected lifetime earnings of men and women by educational attainment were quite similar, with large increments in expected earnings from completing additional levels of schooling (Tables 8 and 9). Among men, the estimates of mean lifetime earnings ranged from a low of \$980,000 for those lacking a high school diploma, to \$1.591million for high school graduates, and to a high of \$3.783 million for men obtaining a Master’s or higher degree. Male high school graduates would be expected to earn \$601,000 more than male high school dropouts, and male Bachelor degree recipients would obtain \$1.340 million more than high school graduates (Table 9). Over the work life, a male bachelor degree holder would be expected to earn nearly \$2 million more than a high school dropout, a relative difference in lifetime earnings between these two groups of nearly three to one.

**Chart 12:**  
Mean Lifetime Earnings Advantages of High School Graduates  
Over High School Dropouts in Massachusetts, All and by Gender  
 (2005, in \$1,000 of Dollars)



Among adult women in Massachusetts, mean lifetime earnings also rose steadily and strongly with additional years of schooling completed. Adult women who lacked a high school diploma/GED would be expected to earn only \$501,000 over their working lives, which is equivalent to mean annual earnings of only \$10,700 over their work lives. Those women obtaining a regular high school diploma or a GED would obtain mean lifetime earnings of \$826,000 which was \$325,000 higher than that of their peers who failed to graduate from high

school. Massachusetts women who obtain post-secondary degrees will substantially outearn their counterparts who terminated their schooling with a regular diploma or a GED certificate. Associate degree holders will earn \$354,000 more than high school graduates over their work lives while women with Bachelor degrees will outearn high school graduates by \$710,000 (Table 9). The mean lifetime earnings of female Bachelor degree holders will exceed those of female high school dropouts by \$1.035 million. These female Bachelor degree holders will obtain mean lifetime earnings 3.7 times as high as those of high school dropouts.

Table 9:  
Differences Between the Mean Lifetime Earnings of  
Massachusetts Adults in Selected Educational Groups, All and by Gender  
(in \$1,000)

	(A)	(B)	(C)
Educational Groups Being Compared	All	Men	Women
H.S. Graduate vs. High School Dropout	\$456	\$601	\$325
Associate Degree vs. High School Graduate	280	349	354
Bachelor's Degree vs. High School Graduate	982	1,340	710
Bachelor's Degree vs. High School Dropout	1,438	1,941	1,035

### **Sources of the Lifetime Earnings Advantages of Better Educated Adults in Massachusetts**

Why are the lifetime earnings of Massachusetts adults with limited schooling so low? What labor market factors account for the considerably higher earnings of adults with higher levels of schooling? Do better educated adults work more hours over their lifetime or are higher earnings premium from work the key factor underlying their lifetime earnings advantages? Key insights into these questions can be gleaned by estimating the mean lifetime hours of work of Massachusetts adults and their mean hourly earnings from employment. We have used findings from the 2005 ACS surveys in Massachusetts to construct estimates of the cumulative hours of paid work by adults in each educational attainment group from ages 18-64.<sup>28</sup> We then divided the mean lifetime earnings of adults in each educational group by mean lifetime hours of work to

<sup>28</sup> The ACS surveys collected data on the number of paid weeks of employment for all working-age respondents in the prior twelve month period. For those who were employed at some point during this period, data were collected on average hours of work per week. We then estimated annual hours of paid work by multiplying weeks worked by mean hours of work per week. Those persons with no paid weeks of employment in the prior 12 month period were assigned 0 hours of work for the year. We then computed mean annual hours of work for persons in each of the six educational groups by single age from 18 to 64.

calculate mean hourly earnings over the lifetime. To facilitate the interpretation of the findings on lifetime work hours, we converted the estimates into annual hours of work equivalents by dividing them by 47, the number of years of potential work over the 18-64 year old age span. Our estimates are displayed in Table 10 and Chart 13.

Table 10:  
Mean Annual Lifetime Hours of Work and Mean Lifetime  
Hourly Earnings of Massachusetts Adults by Educational Attainment  
 (Based on 2005 Cross-Sectional Data)

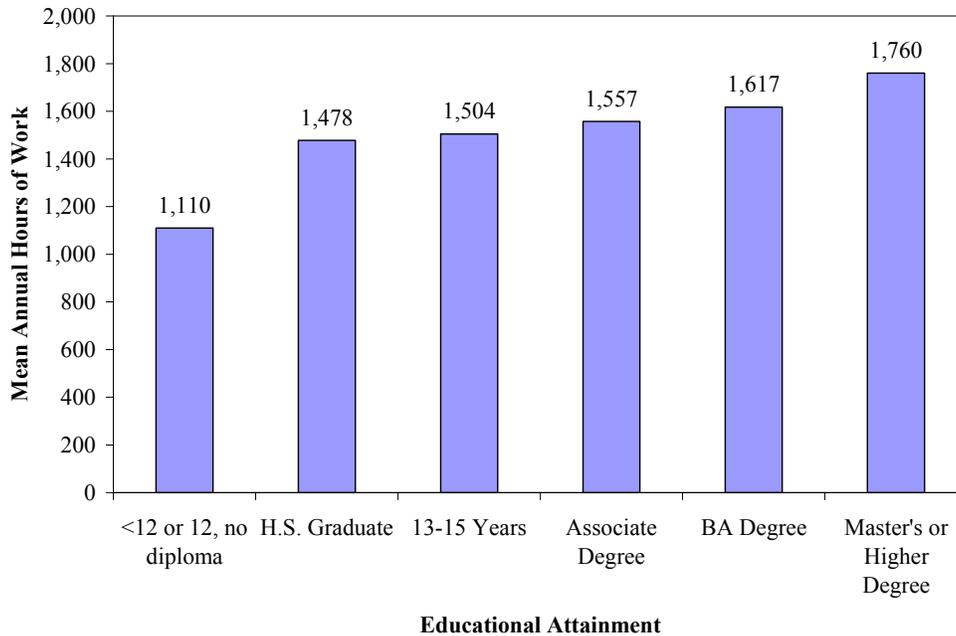
Educational Attainment	(A) Mean Annual Hours of Work	(B) Mean Hourly Earnings
<12 or 12, no diploma or GED	1,110	\$14.65
H.S. diploma/GED	1,478	17.88
13-15 years of school, no degree	1,504	19.36
Associate's degree	1,557	20.52
Bachelor's degree	1,617	29.00
Master's or higher degree	1,760	35.82
All	1,534	24.70

The average adult in Massachusetts will work for 1,534 hours per year over the working life (Table 10). Mean annual hours of paid work over the lifetime in Massachusetts varied considerably across the six educational groups.<sup>29</sup> They ranged from a low of 1,110 hours of work per year among those with no high school diploma or GED to 1,478 hours among high school graduates and to highs of 1,617 for Bachelor degree recipients and 1,780 for those with a Master's or higher degree (Table 10). High school graduates worked approximately 33 per cent more hours per year than high school dropouts, and adults with Bachelor degrees would work about 10% more hours per year than high school graduates (Table 10 and Chart 13). Overall, males worked 500 more hours per year than women (1,752 vs. 1,247), and there were large male/female differences in hours worked in each educational group. Among both men and women, annual hours worked were positively associated with their level of schooling. Female adults with a Master's or higher degree would work nearly twice as many hours per year as female high school dropouts.

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<sup>29</sup> The data on weeks of employment included paid weeks of vacation, sick leave, and military duty.

Chart 13:  
Mean Annual Lifetime Hours of Work Among Massachusetts  
Adults from Ages 18-64 by Educational Attainment



Mean hourly earnings from paid employment over the lifetime for Massachusetts adults also varied widely across educational subgroups. These mean hourly earnings were, as expected, lowest for high school dropouts at \$14.65, and they then rose steadily and substantially as workers acquired additional years of schooling. Employed high school graduates obtained mean hourly earnings of \$17.58, which were nearly \$2.60 or 20 per cent higher than those of high school dropouts while Bachelor degree recipients received mean hourly wages of \$29 and those with more advanced academic degrees obtained nearly \$36 per hour (Table 10, Column B).

The low hourly earnings of high school dropouts and the declining real hourly earnings of male high school graduates over the past two decades have had adverse effects on the labor supply behavior of members of these two groups. National research has shown that the labor supply behavior of young male and female dropouts, high school graduates with no post-secondary schooling, single mothers, and low income women is positively influenced by their expected market wages from employment.<sup>30</sup> The higher their expected market wage, the higher

<sup>30</sup> See: (i) Stephanie Aaronson, Looking Ahead: Young Men, Wage Growth, and Labor Market Participation, Ph.D. Dissertation, Columbia University, January 2000; (ii) Neeta Fogg, An Economic Analysis of the Determinants and the Long Term Labor Market Consequences of Teenage Childbearing in the United States, 1979-1991, Ph.D.

is their probability of being an active member of the labor force and the higher is their expected annual hours of labor supply. Workforce development strategies that are capable of boosting the productivity and market wages of adult dropouts in Massachusetts can boost their annual earnings both directly through higher wages and indirectly by increasing their willingness to supply more hours of paid work during the year. Illegal immigration into the state by increasing the supply of less educated workers has both depressed market wages of native born dropouts, and legal immigrants, especially Blacks and Hispanics, and has led to some displacement from employment of young native born males with no post-secondary schooling. By failing to enforce existing immigration laws and wage standards, both federal and state authorities have contributed to the declining wages and earnings of native born workers and legal immigrants with limited formal schooling in the United States and Massachusetts.

### **Time Trends in the Lifetime Earnings of Massachusetts Male and Female Adults by Educational Attainment**

The above findings have highlighted both the existence of limited annual and lifetime earnings of male and female adult dropouts in Massachusetts and large disparities in the earnings of adults by educational attainment. Over the past few decades in the U.S. and our state, the degree of wage and earnings inequality has widened considerably, with growing gaps between the mean earnings of adults across and within educational levels. The absolute and relative size of the earnings gaps between the highest and lowest paid workers in the nation have increased sharply since the end of the Golden Era of the U.S. economy in 1973.<sup>31</sup> After moderating during the labor market boom years from 1995-2000, earnings gaps have accelerated again since the end of the national labor market boom in early 2001.

To identify trends in the expected lifetime earnings of male and female adults by educational attachment over the past few decades, we have analyzed the findings of the decennial censuses for 1980, 1990, and 2000 to calculate expected lifetime earnings for

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Dissertation, Department of Economics, Northeastern University, 1997; (iii) John W. Graham and Andrea H. Beller, "The Effect of Child Support Payments on the Labor Supply of Female Family Heads", Journal of Human Resources, Vol. 27, No. 4, 1989, pp. 664-688.

<sup>31</sup> For a review of trends in earnings and income inequality in the U.S. since the end of the Golden Era and the economic, technological, and demographic forces underlying this rise in economic inequality, See: (i) Ray Marshall (Editor), Back to Shared Prosperity: The Growing Inequality of Wealth and Income in America, M.E. Sharpe, Armonk, New York, 2000; (ii) Peter Gottschalk and Sheldon Danziger, America Unequal: The Changing Distribution of Income, Russell Sage Foundation, New York, 1996.

Massachusetts men and women in five educational groups in 1979, 1989, and 1999. Findings for each of these years were then compared to those for 2005 based on the 2005 ACS surveys. Lifetime earnings for each of the prior time periods were converted into constant 2005 dollars via use of the national Consumer Price Index for All Urban Consumers (CPI-U).

The mean lifetime earnings of male high school dropouts in Massachusetts have declined considerably and consistently since the end of the 1970s (Table 11 and Chart 14). In 1979, the estimated mean lifetime earnings of male dropouts were estimated to be \$1.383 million. The expected mean lifetime earnings of this group of men in Massachusetts declined during the 1980s and even more substantially in the 1990s (\$172,000 or 14%). Between 1999 and 2005, the mean lifetime earnings of male high school dropouts in Massachusetts fell by another \$123,000 or 11%. Over the entire 1979-2005 period, mean lifetime earnings of these male dropouts fell by \$402,000 or 29%. As will be revealed in a following section, this extraordinarily high rate of earnings decline contributed to a steep decline in marriage rates and family formation among this group of men, with an accompanying rise in single parent families with their high rates of poverty and dependency.

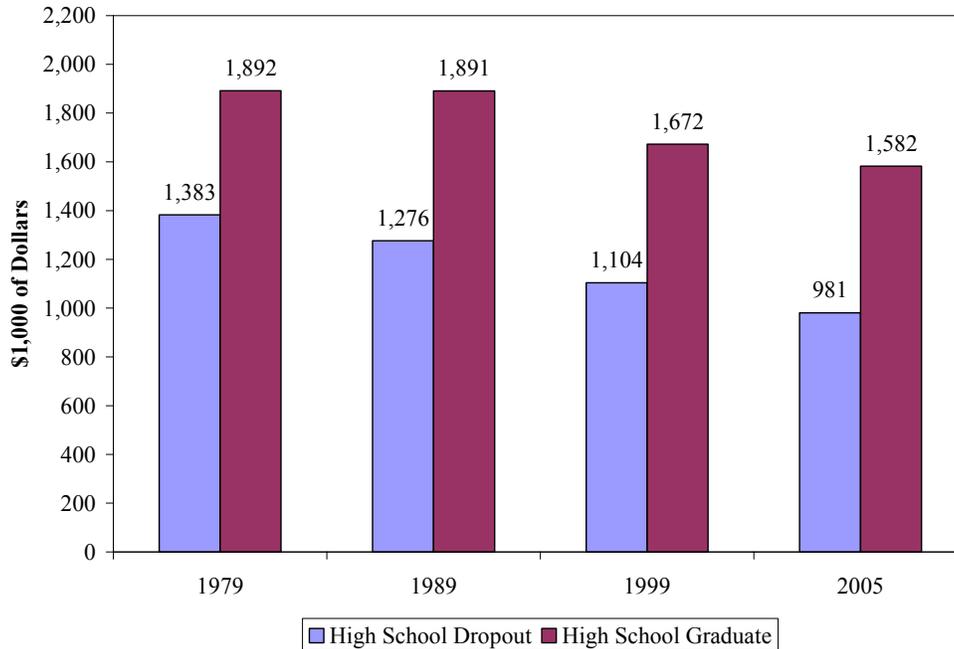
Table 11:  
Trends in the Mean Lifetime Earnings of Male Adults From Ages 18-64 by  
Educational Attainment Over the 1979 to 2005 Period  
(in 1000s of Constant 2005 CPI-U Dollars)

	(A)	(B)	(C)	(D)	(E)	(F)	(G)
Educational Attainment	1979	1989	1999	2005	1999-2005	1979-2005	Per Cent Change 1979-2005
<12 or 12, no diploma/GED	\$1,383	\$1,276	\$1,104	\$981	\$-123	\$-402	-29
H.S. diploma/GED	1,892	1,891	1,672	1,582	-90	-310	-16
13-15 years	2,196	2,165	2,134	1,912	-222	-284	-13
Bachelor's degree	2,836	3,156	3,368	2,933	-435	+97	+3
Master's or higher degree	3,273	3,722	4,133	3,744	-384	+471	+15

Source: (i) 1980, 1990, and 2000 Censuses of Population and Housing, public use files; tabulations by authors;

(ii) 2005 American Community Surveys, public use files.

Chart 14:  
Trends in the Mean Lifetime Earnings of Male  
High School Dropouts and Graduates in Massachusetts, 1979 to 2005  
(in Constant 2005 Dollars)



Male high school dropouts were unfortunately not the only group of men in our state to experience a steep decline in their lifetime earnings over the 1979-2005 period. High school graduates and those men with only a few years of post-secondary schooling also saw their real earnings drop precipitously over this same 26 year period. Mean lifetime earnings of male high school graduates fell by \$310,000 or 16% while their peers with 1-3 years of college experienced a drop of \$284,000 or 13% in their mean lifetime earnings. Only those males with a Bachelor's or higher academic degree had higher lifetime earnings in 2005 than they did in 1979, with all of these gains taking place by the end of the 1990s.<sup>32</sup> The relative earnings position of male dropouts deteriorated badly between 1979 and 2005. In 1979, male high school dropouts in Massachusetts had lifetime earnings approximately one-half as high as those of Bachelor degree holders. By 2005, the mean lifetime earnings of male dropouts had declined to only one-third of those of Bachelor degree holders in the state. The earnings gaps between the state's best educated males and those with 12 or fewer years of schooling had increased considerably,

<sup>32</sup> Every one of the five educational groups of males in Massachusetts experienced declines in their mean lifetime earnings between 1999 and 2005, with the relative size of these declines being 5 to 13 per cent.

creating a widening gulf in personal earnings and incomes among males in the state that in turn generated widening inequalities in family incomes.

In sharp contrast to the experiences of men, the mean lifetime earnings of Massachusetts women increased substantially over the past 26 years, rising from \$736,000 in 1979 to \$1.292 million in 2005, a gain of \$556,000 or close to 75 per cent (Table 12). These large gains in lifetime earnings for the average woman were generated by a combination of increased weeks and hours of employment during the year and rising real hourly earnings. While all educational groups of women shared in these earnings gains, the absolute and relative size of the improvements varied widely across educational attainment subgroups. For those women lacking a high school diploma/GED, mean lifetime earnings in 2005 were \$49,000 or 11% higher than they were in 1979 despite declines in earnings among these women between 1999 and 2005. The mean lifetime earnings of high school graduates rose by 26% over this 26 year period, while women with 1-3 years of college boosted their lifetime earnings by 42%. The largest absolute and relative gains in mean lifetime earnings took place among women with a Bachelor's or higher degree. Their mean lifetime earnings rose by 53 to 58 per cent.<sup>33</sup> In 1979, an adult woman with a Bachelor's degree had mean lifetime earnings that were \$522,000 above those of women lacking a high school diploma, a relative difference of 115%. By 2005, the gap between the lifetime earnings of these two groups of women had widened to \$1.035 million, with Bachelor degree holders obtaining lifetime earnings 3.1 times as high as those of their counterparts lacking a high school diploma. As will be revealed below, those women without a high school diploma were considerably less likely to be married in 2005 than they were in 1979 although many were mothers. Children raised in these single parent families where the mother lacked a high school diploma were the most poverty prone group of children in the state in 2005, placing them at jeopardy of a wide array of developmental problems, including low cognitive skills, malnutrition, poor health, and school failure.

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<sup>33</sup> The per cent growth in the expected mean lifetime earnings of all women was by 75%, exceeding the growth rates for women in each of the five educational subgroups. This seemingly paradoxical result was attributable to the fact that the educational attainment of Massachusetts women improved over the decade, with a sharp rise in the share of women holding a Bachelor's or higher degree.

Table 12:  
Trends in the Mean Lifetime Earnings of Massachusetts Female Adults by  
Educational Attainment from Ages 18-64 Over the 1979 to 2005 Period  
(in \$1000)

	(A)	(B)	(C)	(D)	(E)	(F)	(G)
Educational Attainment	1979	1989	1999	2005	1999–2005	1979–2005	Per Cent Change 1979-2005
<12 or 12, no diploma/GED	\$452	\$540	\$588	\$501	-87	+49	+11%
H.S. diploma/GED	658	866	913	826	-87	+168	+26%
13-15 years	804	1,105	1,218	1,139	-79	+335	+42%
Bachelor's degree	974	1,388	1,679	1,536	-143	+562	+58%
Master's or higher degree	1,410	1,934	2,179	2,158	-21	+748	+53%
All	736	1,077	1,314	1,292	-22	+556	+75%

Source: (i) 1980, 1990, and 2000 Censuses of Population and Housing, public use files;  
(ii) 2005 American Community Surveys, public use files.

### **The Health Insurance and Pension Coverage of Massachusetts Workers by Educational Attainment**

Among the other employment-related economic benefits accruing to workers with more schooling are a higher rate of coverage by health insurance and pension plans at work and more generous benefits under such plans. To identify the degree to which Massachusetts workers in selected educational groups were covered by such employee benefit plans in recent years, we analyzed the findings of the March 2005 and March 2006 CPS surveys for Massachusetts. The March CPS survey contains a work experience and income supplement that collects information on the health insurance and pension coverage of respondents on jobs held in the prior calendar year. Key findings of our analysis of the March 2005 and March 2006 data are summarized in Table 13. The estimates are based on two year averages for 2004-2005.

Table 13:  
Per Cent of 18-64 Year Old Employed Workers in Massachusetts Who Are Covered by a Health Insurance or Pension Plan at Work by Educational Attainment, 2004-2005 Averages

	(A)	(B)
Educational Attainment	Health Insurance	Pension Coverage
<12 or 12, no diploma or GED	36.2	24.9
H.S. graduate/GED	47.6	41.5
13-15 years	49.9	40.0
B.A. degree	67.3	58.8
Master's or higher degree	67.5	68.4
All	55.7	49.1

Sources: March 2005 and March 2006 CPS surveys, public use files, tabulations by authors.

Overall, nearly 56 of every 100 Massachusetts workers were covered by a health insurance plan from their employers. The rates of health insurance coverage ranged from a low of 36% among adult workers lacking a high school diploma to highs of 67% for those workers with a Bachelor's or higher degree. Employed high school dropouts were the least likely to be covered by a health insurance plan at work, and nearly 30 per cent of them had no health insurance coverage whatsoever. A high share of employed high school dropouts obtain their health insurance coverage from the Medicaid system.

Pension coverage rates among Bay State workers also were strongly associated with their educational attainment. Only 49% of all employed 18-64 year olds reported to be covered by some pension plan at work. These pension coverage rates ranged from a low of 25 per cent among high school dropouts, to 42% among high school graduates, and to a high of 68% among employed adults with a Master's or higher degree. Again, high school dropouts were the least likely to be covered by a key employee benefit that will have a major influence on their economic well-being in their retirement years.

### **Educational Attainment and Income Inadequacy Problems of Massachusetts Adults**

The limited employability and annual earnings of Massachusetts adults without high school diplomas can be expected to increase their exposure to various types of income

inadequacy problems.<sup>34</sup> We have used three different sets of income criteria to classify the income inadequacy status of an adult at the time of the 2005 ACS survey:

- Poor. A person who is a member of a family with a combined annual money income below the federal government's official poverty income thresholds. In 2004, a family of four with a pre-tax money income below \$18,600 would have been classified as poor.
- Poor or near poor. A person who is a member of a family with a combined money income below 125 per cent of the federal government's poverty income thresholds.
- Low income. A person who is a member of a family with a combined money income below 200 per cent of the federal government's poverty income thresholds.

Findings on the weighted average income thresholds by family size that were used to define the poverty, poverty/near poverty, and low income status of persons in both Massachusetts and the U.S. during 2005 are displayed in Table 14. The values of these poverty income thresholds ranged from a low of \$10,160 for an unrelated individual under age 65,<sup>35</sup> to \$12,755 for a two person family, to just under \$20,000 for a four person family, and to a high of \$40,288 for families containing 9 or more persons. A family with a combined money income for the year below the poverty threshold is categorized as poor. The poor/near poor income thresholds are set at 125% of the poverty line while the low income thresholds are set at twice the poverty line. These low income thresholds ranged from slightly over \$20,000 for a single individual under the age of 65 to just under \$40,000 for a four person family, and to \$53,366 for a family containing six persons.

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<sup>34</sup> For a review of these alternative definitions of income inadequacy including the low income definition, See: (i) Garth Mangum, Stephen Mangum, and Andrew Sum, The Persistence of Poverty in the United States, Johns Hopkins University Press, Baltimore, 2003; (ii) Gregory Acs, Katherine Ross Phillips, and Daniel McKenzie, Playing by the Rules but Losing the Game: America's Working Poor, Urban Institute, Washington, D.C., May 2000.

<sup>35</sup> Persons living by themselves or with others to whom they are not related are treated as a family of one in determining their poverty status. A separate, somewhat lower poverty income threshold is set for individuals over the age of 65. Our analysis, however, is restricted to adults between the ages of 18-64.

Table 14:  
Weighted Average Poverty Thresholds, 125% of Poverty Thresholds, and Low Income  
Thresholds for Single Persons and Families Containing Two to Nine Persons, 2005

Family Size	(A) Weighted Average Poverty Threshold	(B) 125% of Poverty Threshold	(C) Low Income (200% of Poverty) Threshold
One person (unrelated)	9,973	12,446	19,946
• Under 65 years	10,160	12,700	20,320
• 65 years and older	9,367	11,709	18,734
Two	12,755	15,944	25,510
Three	15,577	19,471	31,154
Four	19,971	24,964	39,942
Five	23,613	29,516	47,226
Six	26,683	33,354	53,366
Seven	30,249	37,811	60,498
Eight	33,610	42,013	67,220
Nine or More	40,288	50,360	80,576

Source: U.S. Census Bureau.

The findings of the 2005 American Community Surveys in Massachusetts were used to identify the poverty, poverty/near poverty, and low income status of each Massachusetts adult ages 18-64 years old. We estimated the incidence of these three income inadequacy problems for adults by single age group in each of six educational groups. The findings were then summed across each age group to estimate the number of years that an adult with a given level of educational attainment could be expected to experience each of these three problems over their work lives from ages 18-64. Key findings of our analysis are displayed in Table 15 and Charts 15 and 16.

Table 15:  
Mean Years Spent in a Poverty, Poverty/Near Poverty, or Low Income  
Status by Massachusetts Adults Ages 18-64 by Educational Attainment  
(2005 Cross Sectional Data)

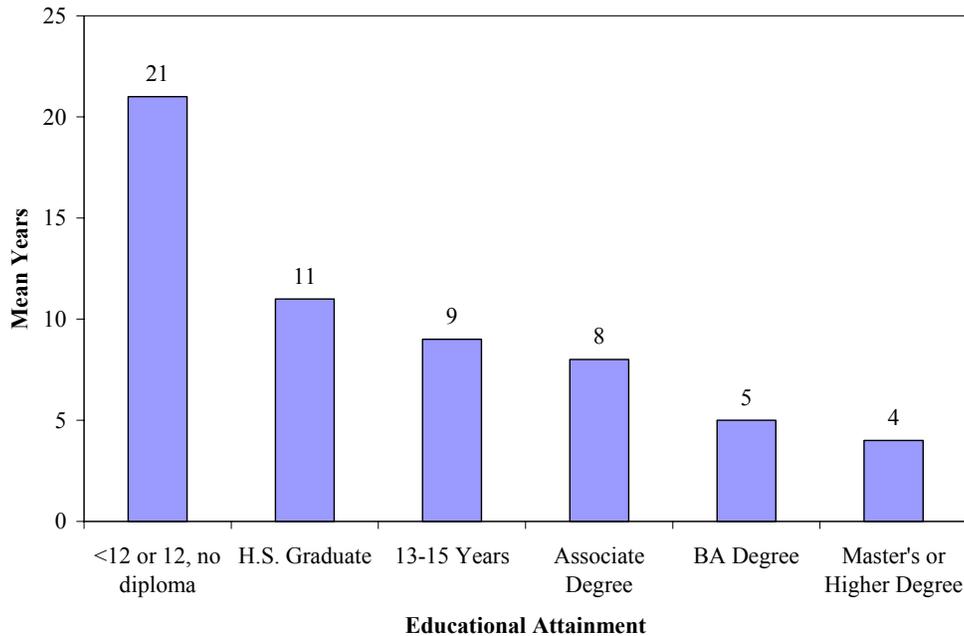
	(A)	(B)	(C)
Educational Attainment	Poor	Poor/Near Poor	Low Income
<12 or 12, no diploma	9.7	12.5	20.5
H.S. diploma/GED	4.5	6.0	10.7
13 – 15 years	4.6	5.6	9.3
Associate’s degree	3.0	3.9	7.7
Bachelor’s degree	3.0	3.5	5.5
Master’s or higher degree	2.2	2.6	3.7
All	3.8	4.9	8.7

On each of the three income inadequacy measures, adults who failed to graduate from high school or obtain a GED certificate were considerably more likely to experience an income inadequacy problem and, thus, be expected to spend more years over their adult lives with inadequate incomes. The average adult high school dropout in Massachusetts would be expected to spend nearly 10 years of their work lives in poverty, a duration equivalent to just over 20 per cent of their work lives from ages 18-64. High school dropouts would spend twice as many years in poverty as their peers who graduated from high school but did not complete any years of post-secondary schooling (9.7 vs. 4.5). High school dropouts would be expected to spend three times as many years in poverty as their counterparts who graduated from college with a Bachelor’s degree (9.7 years vs. 3.0 years, respectively).

High school dropouts would spend 12.5 years with incomes below 125% of the poverty line (Table 15). This mean number of years living in poverty/near poverty conditions was more than twice as high as that of high school graduates (12.5 years vs. 6.0 years) and nearly four times as high as that of Bachelor degree recipients. When the income inadequacy threshold is raised to twice the poverty line, the per cent of dropouts who fall below the adequacy threshold rises sharply. Mean expected years in a low income status for high school dropouts in Massachusetts was 20.5 (Table 15 and Chart 15). On average, dropouts in Massachusetts will spend nearly half of their adult work lives living in a low income status. Problems of low incomes among dropouts are, thus, pervasive throughout their adult working-age years. Their mean expected number of years in a low income status was nearly twice as high that of high

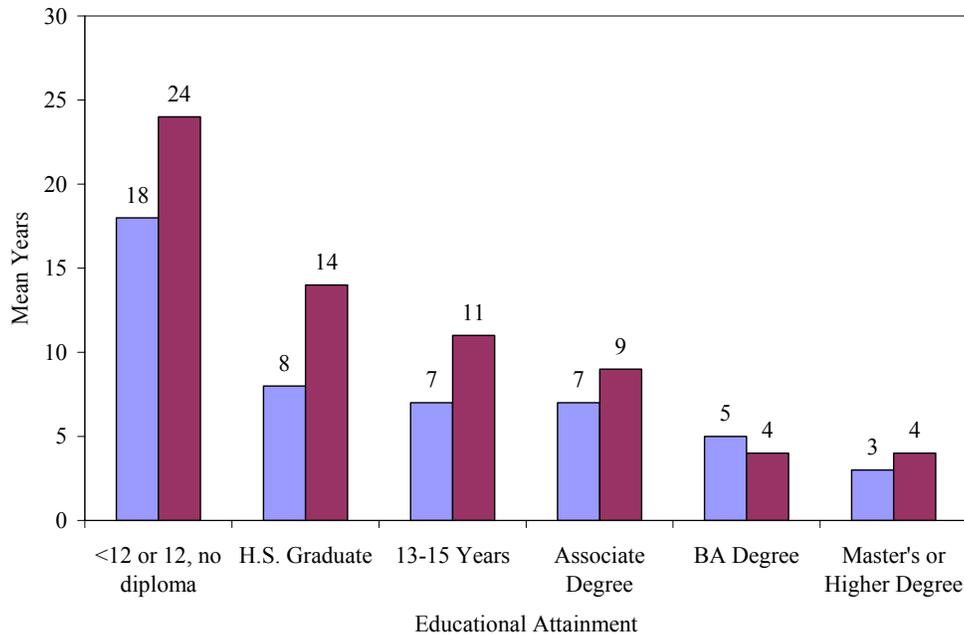
school graduates and close to four times higher than that of Bachelor degree holders (20.5 vs. 5.5 years).

Chart 15:  
Mean Expected Years in a Low Income Status Among  
Massachusetts Adults from Ages 18-64 by Educational Attainment



The links between educational attainment and the low income status of Massachusetts adults were quite strong for both men and women. For both gender groups, adults who left school without obtaining a diploma would spend a considerably greater number of years in a low income status than their better educated peers. Among women, female dropouts would be expected to fall below the low income threshold for 24 years over the 18-64 life span, or one half of the total years available (Chart 16). In each educational attainment group, except those with a Bachelor's degree, women were expected to spend more years in a low income status than their male counterparts. For both gender groups, adult high school dropouts would spend four to six times as many years in a low income status as their peers who obtained a Bachelor's degree.

Chart 16:  
Mean Expected Years in a Low Income Status Among  
Massachusetts Men and Women from Ages 18-64 by Educational Attainment



### **Marriage Rates, Out-of-Wedlock Childbearing, and the Family Income Position of Adult High School Dropouts in Massachusetts**

Findings in the preceding sections of this report have revealed steep declines in the annual earnings of male high school dropouts in Massachusetts over the past few decades and very limited annual earnings among most female dropouts. The sharp deterioration in the economic fortunes of many males with no high school diploma would be expected to reduce their attractiveness as marriage partners and increase the instability of their marriages. To identify changes in the marital status of Massachusetts men and women ages 20-64 in various educational attainment groups over time, we analyzed the findings of the decennial censuses from 1980 through 2000 and the 2005 American Community Surveys.

In our analysis, a married adult is a 20-64 year old person who was married and living with their spouse at the time of the survey.<sup>36</sup> Findings on the per cent of native born males in Massachusetts who were married in 1980, 1990, 2000, and 2005 are displayed in Table 16. At the time of the 1980 Census, approximately 64 of every 100 native born males 20-64 years old

<sup>36</sup> A respondent who was married but had a spouse that was temporarily absent from the home was classified as married.

were married. By 1990, this ratio had declined to slightly below 57% and would remain in the 56 to 57 per cent range over the next 15 years. Between 1980 and 2005, the structure of marriage rates among native born men by educational attainment changed markedly. Male high school dropouts experienced a major decline (25 percentage points) in their rate of marriage between 1980 and 2005 followed by high school graduates (-16 percentage points). Marriage rates of men in the other three higher educational groups were essentially unchanged over this 25 year period. In 1980, over two-thirds of male high school dropouts were married, a marriage rate higher than that of men in every other educational group except those with a Master's or higher degree. By 2005, only a minority (43%) of male high school dropouts were married and living with their spouses (Table 16). Marriage rates of native born males in 2005 rose steadily and strongly with their level of formal schooling, ranging from a low of 43 per cent among high school dropouts to a high of just under 75 per cent for men with a Master's or higher degree. The trend in marriage rates among males with no diploma has been steadily downward over the past 25 years. Yet many of these men have continued to father children in our state and the nation.

Table 16:  
Trends in Marriage Rates Among 20-64 Year Old Native Born Males in  
Massachusetts by Educational Attainment, 1980 to 2005  
(in %)

	(A)	(B)	(C)	(D)	(E)
Educational Attainment	1980	1990	2000	2005	Percentage Point Change, 1980 – 2005
<12 or 12, no diploma or GED	67.6	53.5	45.9	42.8	-24.8
H.S. graduate/GED	66.0	54.3	52.2	49.5	-16.5
13-15 years	53.9	53.2	54.7	53.2	-.7
Bachelor's degree	61.2	57.0	59.4	60.4	-.8
Master's or higher degree	73.5	73.3	73.9	74.5	+1.0
All	63.6	56.7	56.9	56.4	-7.2

Sources: (i) 1980, 1990, and 2000 Censuses of Population and Housing, PUMS files, tabulations by authors;  
(ii) 2005 American Community Surveys, public use files, tabulations by authors.

The decline in marriage among adult high school dropouts in the Commonwealth has not been confined to men. Adult women who failed to graduate from high school also have been characterized by steep declines in their marriage rates over the past 25 years (Table 17). In 1980,

nearly 6 of every 10 native born women (ages 20-64) without a high school diploma in Massachusetts were married. This rate of marriage among female high school dropouts declined steadily and steeply over the following 25 years. By 2005, only 36 of every 100 adult women who lacked a regular high school diploma or a GED were married, a decline of 24 percentage points since 1980. In 2005, the marriage rates of adult women in our state rose fairly steadily with their level of formal schooling. While only 36 of every 100 female dropouts were married, 53 per cent of those women with a high school diploma were married as were 58 of every 100 women with a Bachelor's degree and 62 of every 100 women with a Master's or higher degree (Table 17, Column D). In 1980, the marriage rate of female dropouts came very close to matching the average marriage rate for all adult women. By 2005, they were far below the average and ranked lowest among the five educational subgroups, falling far behind the marriage rates of their better educated peers in the state.

Table 17:  
Trends in Marriage Rates of Massachusetts Native Born Women  
20-64 Years Old by Educational Attainment, 1980 to 2005  
(in %)

	(A)	(B)	(C)	(D)	(E)
Educational Attainment	1980	1990	2000	2005	Percentage Point Change, 1980 – 2005
<12 or 12, no diploma or GED	59.7	50.3	43.2	35.8	-23.9
H.S. graduate/GED	68.3	61.2	57.0	53.2	-15.1
13-15 years	52.7	53.2	53.8	50.1	-2.6
Bachelor's degree	56.2	53.9	56.5	57.5	+1.3
Master's or higher degree	55.2	59.3	61.4	62.1	+6.9
All	60.7	56.0	55.5	53.9	-6.8

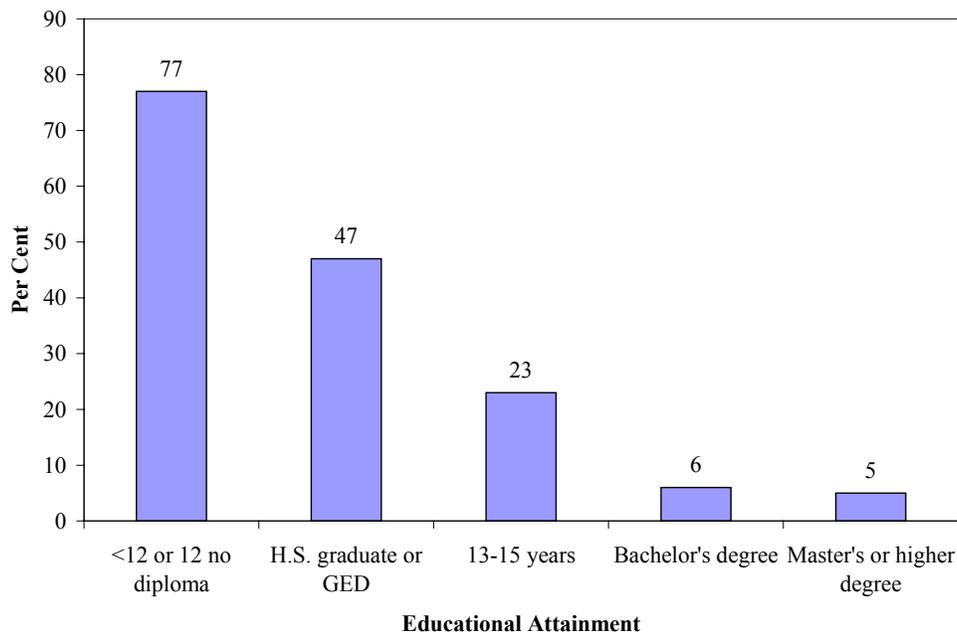
Sources: (i) 1980, 1990, and 2000 Censuses of Population and Housing, PUMS files, tabulations by authors;

(ii) 2005 American Community Surveys, public use files, tabulations by authors.

The steep decline in marriage rates among poorly educated women has not been accompanied by an equivalent decline in their rate of childbearing. As a consequence, a high and rising share of births to female dropouts in Massachusetts has been taking place out of wedlock. Findings of the 2004 and 2005 American Community Surveys in Massachusetts were examined to identify the per cent of births to women (ages 15-50) that were out-of-wedlock. The share of

births out-of-wedlock were estimated for women in five educational attainment subgroups.<sup>37</sup> Statewide, 24 per cent of the births to women in the state were categorized as out-of-wedlock. However, among mothers lacking a high school diploma or a GED, 77 per cent of births took place out-of-wedlock in 2004-2005 (Chart 17). Out-of-wedlock births also were quite high among female high school graduates (47%) in Massachusetts, but then fell sharply for women with a Bachelor's or higher degree (5 to 6 per cent). The share of births to unmarried women was 15 times higher among high school dropouts than among women with a Master's or more advanced academic degree.

**Chart 17:**  
Per Cent of Births to Massachusetts Native Born Women (15-50 Years Old)  
That Were Out-of-Wedlock by Educational Attainment of the Mother, 2005



Nationally, birth rates to teenaged women and those in their early 20s are strongly associated with their educational attainment, educational aspirations, and basic academic skills.<sup>38</sup> The National Education Longitudinal Study (NELS 88) has been tracking a nationally

<sup>37</sup> The ACS questionnaire asked female respondents to identify whether they had given birth to a child in the previous 12 months. There is some under-reporting of out-of-wedlock births in the ACS survey, thus, our findings should be viewed as conservative.

<sup>38</sup> National research has revealed that teenagers and young adults with limited basic academic skills and low educational expectations are significantly more likely to bear children in their teenaged years. See: (i) Gordon Berlin and Andrew Sum, Toward a More Perfect Union: Basic Skills, Poor Families, and Our Economic Future, Ford Foundation Project on Social Welfare and the American Future, New York, 1988; (ii) Neeta Fogg, The Determinants and Economic Consequences of Teenage Childbearing in the United States, Ph.D. Dissertation, Department of Economics, Northeastern University, Boston, 1997.

representative sample of youth who were eighth graders in 1988. At the time of the 1996 followup interview, eight years later, slightly over 20 per cent of the women had given birth to a child, three-fourths of which were out-of-wedlock (Table 18). Birth rates among these women were strongly associated with their educational attainment and school enrollment status. Two thirds of the women who had dropped out of high school and 61 per cent of those who were GED holders had given birth to a child by 1996, more than 90 per cent of whom were born out-of-wedlock. Birth rates were sharply lower among women who graduated from high school (31 per cent) and especially among those who were enrolled in college (7 per cent). These unwed young mothers face a very high risk of long term poverty and dependency in the absence of policy interventions to boost their schooling, academic skills, and occupational skills.

Table 18:  
Per Cent of Female Eighth Graders in 1988 Who Had Given Birth to a Child by 1996,  
All Mothers and Unmarried Mothers, by Educational Attainment in 1996

	(A)	(B)	(C)
Educational Attainment	All Mothers	Unmarried Mothers	Unmarried as % of All
High school dropout	67.3	61.7	92
GED, not enrolled	61.1	57.8	95
High school graduate, not enrolled	31.1	25.1	81
1-3 years of college, not enrolled	12.4	8.5	68
College student	7.0	5.7	81
All	20.4	15.5	76

Given the higher out-of-wedlock birth rates among women with limited schooling in Massachusetts, one would expect an above average fraction of families with children headed by a high school dropout to be single parent families (the vast majority of whom are single mother families). In 2005, nearly 30 per cent of all families with one or more children under 18 years of age in Massachusetts were single parent families (Table 19). Of those families headed by a high school dropout, just under 50 per cent were single parent families. The share of families with children that were single parent families declined steadily with the educational attainment of the family head, falling to 38% for high school graduates, 17% for Bachelor degree holders, and to a low of 14% for those families headed by an adult with a Master's or higher degree.

Table 19:  
Per Cent of Massachusetts Families with Children that Were Headed by  
A Single Parent by Educational Attainment of Family Head, 2005

	(A)	(B)	(C)
Educational Attainment	Families With Children	Single Parent Families	% Single Parent
<12 or 12, no diploma	63,451	31,041	49%
H.S. graduate/GED	193,140	73,423	38%
13-15 years	208,318	73,268	35%
Bachelor's degree	175,234	29,753	17%
Master's or higher degree	139,404	19,898	14%
All family heads with children	779,547	227,384	29%

The economic well-being of Massachusetts families with children is strongly linked to the educational attainment of the heads of those families and their marital status. Families headed by individuals with limited schooling, especially single parent families, are far more likely to face severe income inadequacy problems. During 2005, nearly 14 of every 100 Massachusetts families with children had incomes so low that they were classified as poor or near poor (Table 20). The share of Massachusetts families with children that were poor or near poor varied quite widely by the educational attainment of the family head. Families that were headed by an individual lacking a high school diploma/GED faced the highest rate of severe income inadequacy problems. Forty per cent of such families were poor/near poor versus only 20 per cent of families headed by a high school graduate and only 2 to 3 per cent of families headed by an individual with a Bachelor's or post-graduate degree. If the family headed by a high school dropout also was a single parent family, then the incidence of poverty/near poverty problems rose to 72 percent. Children raised in such low income families for a sustained period of time will face a series of adverse behavioral, cognitive, health, nutrition, and school performance difficulties.<sup>39</sup> Those children raised in single parent families are also more likely to be subject to child abuse and commit more crimes as adolescents.<sup>40</sup> These developmental problems will

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<sup>39</sup> See: (i) Sara McLanahan and Gary Sandefur, Growing Up With a Single Parent, Harvard University Press, Cambridge, 1994; (ii) Clifford Johnson, Andrew Sum, and Neal Fogg, "Young Workers, Young Families, and Child Poverty", in of Heart and Mind: Social Policy Essays in Honor of Sar A. Levitan, (Editors: Garth Mangum and Stephen Mangum), W.E. Upjohn Institute for Employment Research, Kalamazoo, 1996.

<sup>40</sup>

increase their risks of dropping out of high school, becoming a teen parent, and becoming involved with the criminal justice system in their adolescent and early adult years.<sup>41</sup>

Table 20:  
Per Cent of Massachusetts Families with Children that Were  
Poor/Near Poor by Educational Attainment of the Family Head, 2005

Educational Attainment	(A) Families with Children	(B) Families with Children Who Were Poor or Near Poor	(C) % Poor or Near Poor
<12 or 12, no diploma/GED	63,451	25,508	40.2%
H.S. diploma/GED	193,140	39,316	20.3%
13-15 years	208,318	30,316	14.7%
Bachelor's degree	17,234	6,030	3.4%
Master's or higher degree	139,404	3,568	2.6%
All family heads with children	779,547	105,087	13.5

### **The Self-Reported Health Status of Massachusetts and U.S. Adults By Their Level of Educational Attainment**

In addition to the large gaps in employment, earnings, employee benefits, and income outcomes between high school dropouts and their better educated peers, there are also a variety of health outcomes that are linked to the educational attainment of adults, including health insurance coverage, access to medical care, overall health status, exposure to various illnesses and diseases, disability problems, and life expectancy. Adults with lower levels of schooling are less likely to receive medical care, less likely to be covered by health insurance, more likely to report poorer health, and much more likely to report physical or mental disabilities than their peers with higher levels of schooling. Findings of national longitudinal research also reveal that dropouts face considerably greater mortality risks in their 20s and 30s, especially among males.

The health conditions of U.S. adults tend to vary fairly widely across educational attainment and income groups. Better educated adults are more likely to be covered by some form of private health insurance, to enjoy higher levels of health insurance coverage from their employers, to have visited a doctor in the past year, to receive better medical care, to be in better

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<sup>41</sup> See: (i) Christina Paxson and Jane Waldfogel, "Work, Welfare, and Child Maltreatment," *Journal of Labor Economics*, Volume 20, Number 3, July 2002, pp. 435-474; (ii) H. Naci Mocan and Erdal Tekin, "Guns and Juvenile Crime", *Journal of Law and Economics*, Volume 45, October 2006.

health, and to live longer than their less educated and less literate peers. In recent years, the U.S. Census Bureau has collected information through the March CPS survey from a sample of U.S. adults on their self-reported health status. For example, respondents to the March 2006 CPS survey were asked to rate their current health status. The allowable responses consisted of the following five categories:

- Excellent
- Very good
- Good
- Fair
- Poor

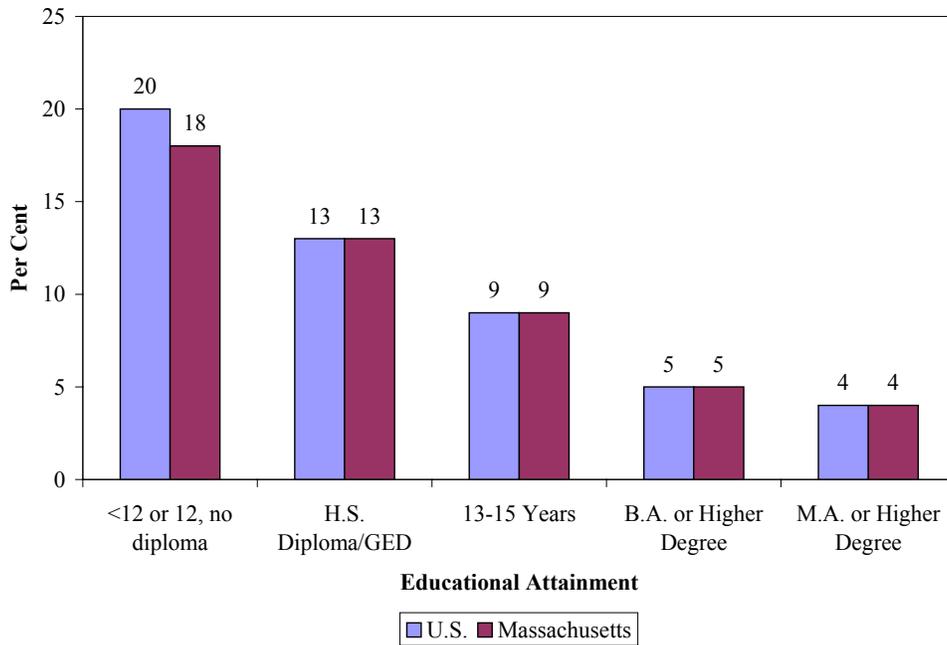
We have analyzed the responses to this health status question by 18-64 year old adults in Massachusetts and the U.S. by their educational attainment. Key findings are displayed in Table 21 and Chart 18. Overall, 72 per cent of Massachusetts adults in the 18-64 year old age group reported that they were either in excellent or very good health in March 2006 (Table 21). The proportion of adults rating their health status as excellent or very good ranged from a low of 57 per cent among those adults lacking a high school diploma/GED to 63 per cent among high school graduates and to highs of 78 to 83 per cent among bachelor degree recipients and those with a Master's or more advanced academic degree (Table 21 and Chart 18). Only 9 per cent of Massachusetts adults rated their health status as "fair" or "poor". The fraction of the state's adults in this health status category ranged from a high of 18 per cent among those lacking a high school diploma/GED certificate to 13% among high school graduates and to lows of 4 to 5 per cent among those with a Bachelor's or higher degree. Thus, adult high school dropouts in Massachusetts were 1.4 times as likely as high school graduates to report being in only fair or poor health and were more than four times as likely to do so as their counterparts with a Bachelor's or more advanced degree.

**Table 21:**  
**Self-Assessments of the Health Status of 18-64 Year Old Adults in**  
**Massachusetts by Educational Attainment, March 2006**  
 (in %)

Educational Attainment	(A)	(B)
	Per Cent Reporting Excellent or Very Good Health	Per Cent Reporting Fair or Poor Health
<12 or 12, no diploma or GED	57	18
H.S. Graduate/GED	63	13
13 – 15 years of school, including Associate degree holders	75	9
B.A. degree	78	5
M.A. or higher degree	83	4
All	72	9

Source: March 2006, Current Population Surveys (CPS), public use files, tabulations by authors.

**Chart 18:**  
**Per Cent of 18-64 Year Old Adults in Massachusetts and the U.S.**  
**Reporting Their Health Status as Fair or Poor, March 2006**



The pattern of findings on the self-reported health status of adults by educational attainment in Massachusetts was identical in four of the five educational subgroups to that of the U.S. (Chart 18). In the nation, 18-64 year old adults with no high school diploma were modestly

more likely than their Massachusetts counterparts to report being in only fair or poor health: 20 per cent of high school dropouts in the U.S. versus 18% of Massachusetts dropouts, respectively. Among those adults with at least a high school diploma, the shares of U.S. and Massachusetts adults reporting fair or poor health were identical. The poorer health of the state's less educated adults will lead to higher future rates of disability and medical outlays, a major part of which is financed by the Medicaid system, as well as to lower rates of employment, lower earnings, and lower life expectancy. Since less educated adults are in poorer health, they can be expected to report disability problems more frequently than their better educated counterparts in the state. To determine the degree of these relationships between the educational attainment of Massachusetts adults and their physical/mental disability status, we analyzed the findings of the 2005 American Community Surveys. Findings below also will reveal that less educated, disabled adults in our state are also considerably more likely than their better educated peers to be jobless and dependent on cash public assistance income to support themselves and their families.

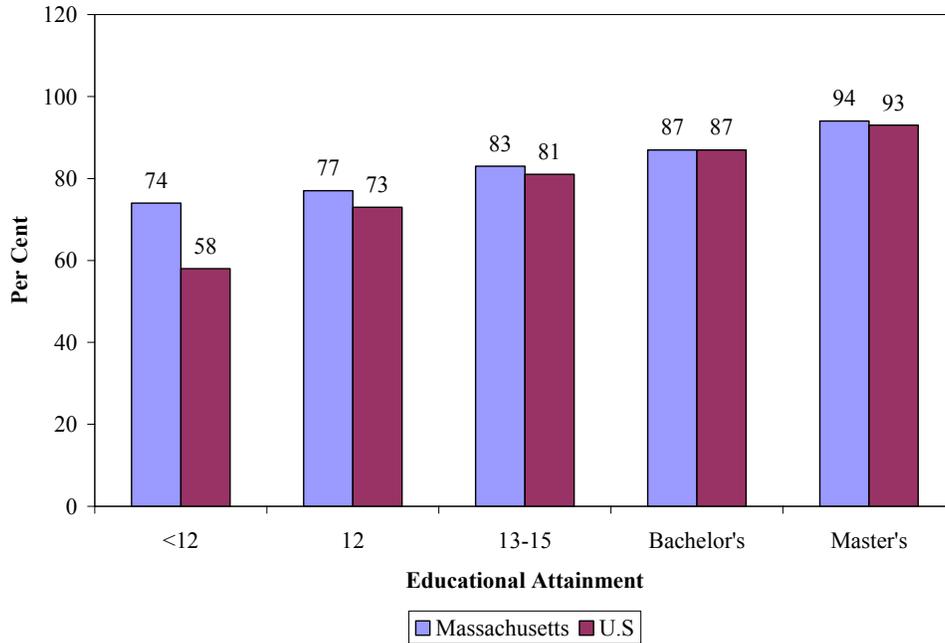
### **Health Insurance Coverage Rates and Medicaid Costs of Massachusetts and U.S. Adults (18-64 Years Old) by Educational Attainment**

Nationally, the health insurance coverage rates of non-elderly adults (18-64) tend to vary quite considerably across educational attainment groups. During the 2004-2005 period, overall health insurance coverage rates of U.S. adults ranged from a low of 58 per cent among those persons lacking a high school diploma to 73 per cent among high school graduates and to a high of 93 per cent for those adults holding a Master's or more advanced academic degree (Chart 19).<sup>42</sup>

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<sup>42</sup> These estimates are based on the findings of the March 2005 and March 2006 CPS surveys for the U.S. The March CPS contains a supplement that collects data on the health insurance coverage of all household members in the prior calendar year. The estimates pertain to health insurance coverage in the prior calendar years 2004 and 2005. They, thus, represent two year averages.

Chart 19:  
Health Insurance Coverage Rates of Massachusetts and U.S. Adults  
(18-64 Years Old) by Educational Attainment, 2004-2005 Averages



In Massachusetts, a higher share of the state’s 18-64 year olds reported having some health insurance coverage than in the nation (83% vs. 78%) during 2003-2004. The largest difference in health insurance coverage rates was among high school dropouts (Chart 19). In Massachusetts, 74 per cent of adults lacking a regular diploma or a GED reported that they were covered by some form of health insurance coverage versus only 58 per cent of their national peers, a 16 percentage point difference. Still, high school dropouts in our state were less likely to be covered by health insurance than their better educated peers, especially those with a Bachelor’s (87%) or a more advanced degree (94%).

The higher rates of health insurance coverage among the state’s adults with no regular high school diploma were not attributable to high rates of health insurance coverage at the workplace but rather to high rates of Medicaid coverage, which are subsidized by the state’s taxpayers (Table 22). Among the employed, only 36 of every 100 high school dropouts were covered by a health insurance plan at work versus 48 of every 100 employed high school graduates and two-thirds of the state’s working adults with a Bachelor’s or higher degree. Health

insurance coverage rates among young immigrant workers with no high school education were extraordinarily low, frequently falling below 20 per cent.<sup>43</sup>

Table 22:  
Health Insurance Coverage Rates and Types of Health Insurance Coverage  
Among 18-64 Year Old Massachusetts Adults by Educational Attainment, 2004-2005 Averages  
(in %)

	(A)	(B)	(C)
Educational Attainment	Any Health Insurance	Employed With Employer Provided Health Insurance	Medicare or Medicaid Coverage
<12 or 12, no diploma or GED	74.2	36.2	57.2
High school graduate	77.1	47.6	26.5
1-3 years of college	82.7	49.9	17.3
B.A. degree	87.3	67.3	7.8
Master's or higher degree	93.7	67.5	4.6
All	83.0	55.7	18.7

Source: March 2005 and March 2006, CPS surveys, public use files, tabulations by authors.

Nearly 1 of 5 Massachusetts adults in the 18-64 age group reported that they were covered by either Medicare or Medicaid insurance. The degree to which the state's adults depended on Medicaid or Medicare coverage for their health insurance varied dramatically by their educational attainment. Slightly over 57 of every 100 non-elderly high school dropouts were covered by Medicare or Medicaid versus only 26 of every 100 high school graduates, 8 of every 100 adults with a Bachelor's degree, and fewer than 5 of every 100 adults with a Master's or more advanced degree. Adult dropouts were more than twice as likely as high school graduates to receive Medicaid/Medicare coverage, and they were 8 to 12 times as likely to do so as adults with a Bachelor's or higher degree (Table 22).

Identifying the costs of supporting adult dropouts on Medicaid is a complex task. The actual fiscal outlays on Medicaid recipients varied quite considerably by age group and disability status. Mean annual costs per non-elderly, non-disabled adult were estimated to be only \$1,637 versus more than \$13,000 per disabled adult and \$14,052 per elderly adult in our state. The Medicaid system, unfortunately, does not provide data on the educational backgrounds of the

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<sup>43</sup> Even lower coverage rates prevail nationally among young immigrant male workers from Mexico and Central America. A high share of these poorly educated, immigrant workers are employed off-the-books and receive no employee benefits from their employers.

individuals covered by this health insurance program. We analyzed the March 2005 and March 2006 CPS data on the educational attainment and disability status of Medicaid recipients in our state. As expected, high school dropouts were disproportionately represented among the ranks of Medicaid recipients and those with disabilities in our state.

For example, slightly over 60% of the 18-64 year old dropouts on Medicaid in Massachusetts during 2004-2005 were disabled versus 52% of high school graduates and fewer than 50% of those with some post-secondary schooling (Table 23). We used these findings to estimate the mean annual costs of providing medical care to non-elderly adult dropouts covered by the Medicaid system in our state in recent years. Our estimates are displayed in Table 23 below.

Table 23:  
The Estimated Annual Average Costs of Providing Medical Care to Non-Elderly Medicaid Recipients (18-64 Years Old) in Massachusetts by Educational Attainment in 2004-2005

	(A)	(B)	(C)	(D)	(E)
Educational Group	% Not Disabled	Annual Costs per Non-disabled	% Disabled	Annual Costs per Disabled Adult	Sum of B & D
H.S. Dropout	39.6	1,637	60.4	13,012	8,508
H.S. Graduate	47.5	1,637	52.5	13,012	7,609
13-15 Years	57.2	1,637	42.8	13,012	6,506
B.A. or Higher Degree	53.6	1,637	46.4	13,012	6,915

Source: (i) March 2005 and March 2006 CPS surveys, work experience and income supplement, public use files, tabulations by authors;  
(ii) Massachusetts Department of Health, "Medicaid Costs Per Person in Massachusetts".

The estimated annual average costs of providing medical care to Massachusetts adults under the Medicaid system are presented in Table 23. For each educational group, we calculated annual average Medicaid costs by multiplying the share of each Medicaid recipient group that was disabled by \$13,012 and the share of adults that were not disabled by \$1,637. The estimated average annual costs of providing Medicaid-financed care in 2004-2005 ranged from a high of \$8,508 for high school dropouts to a low of \$6,506 for Bachelor degree holders (Table 23).

High school dropouts were much more likely than their better educated counterparts to be dependent on Medicaid for their health insurance coverage. To estimate the taxpayer cost of providing Medicaid coverage to adults in Massachusetts in 2004-2005, we multiplied the average

annual cost of providing Medicaid coverage for the members of each educational group by the percent of the members of each group that were Medicaid/ Medicare recipients. Findings of our cost analysis are displayed in Table 24. Given the above average share of high school dropouts that were dependent on Medicaid for their health insurance coverage and their higher costs of care, the average costs of providing Medicaid health care coverage to adult dropouts in 2004-2005 was \$4,875 versus only \$2,016 for high school graduates, and only \$449 for adults with a Bachelor's or higher degree. Over the lifetime from ages 18-64, the cost difference of providing Medicaid coverage to high school dropouts versus high school graduates with no college was equal to an extraordinarily high \$134,373.

Table 24:  
Mean Annual Per Capita Costs of Medicaid for 18-64 Year Olds by  
Educational Attainment, Massachusetts, 2004-2005

	(A)	(B)	(C)
Educational Attainment	Medicaid Recipients (in %)	Cost of Medicaid	Average Annual Cost (in \$)
1-12 Years, No Diploma or GED	57.2	8,508	4,875
High School Diploma, No College	26.5	7,609	2,016
Some College, Including Associate Degrees	17.3	6,506	1,125
Bachelor's or Higher Degree	6.5	6,915	449

### **Educational Attainment and the Mortality Rates of Young and Middle-Aged Adults**

In the preceding discussions, we have revealed that high school dropouts experience poorer health than their better educated peers, are less likely to be covered by any type of health insurance, are less affluent, and as a result are more likely to experience severe income inadequacy problems that affect their diet and nutrition. The combined effects of these health, nutrition, and medical care problems would be expected to increase mortality rates among less educated adults, thereby reducing their life expectancy.<sup>44</sup> To identify the links between the educational attainment of young and middle aged adults and their mortality rates over time, we analyzed the findings of the National Longitudinal Survey of Youth (1979) over a 25 year period, 1979-2004, to identify the numbers and characteristics of those sample members who had

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<sup>44</sup> Poorer less educated males are more likely to be the victims of violent crime, to commit crimes, and to spend more time in jail and prison with its attendant adverse consequences for future health and physical well-being.

become deceased by the time of the 2004 followup interview.<sup>45</sup> There were approximately 12,700 14-21 year olds who were interviewed during the first round of the NLS surveys in 1979. The national sample was reduced in later years to approximately 7,000. Each followup survey included reasons for the inability to interview respondents, including death. The findings of the 1980 to 2004 followup interviews were analyzed to identify all those individuals who were deceased by 2004. Our sample estimates were weighted to reflect the potential population of 39-46 year olds in 2004.<sup>46</sup>

Overall, 3.5 per cent of the original population of 14-21 year olds in 1979 were deceased by 2004 (Table 25). Males were twice as likely to have died as females (4.5% vs. 2.3%). The mortality rates of this group of adults declined steadily and steeply with their years of educational attainment. Among those who left school before acquiring a high school diploma, 7.4% were deceased by 2004 versus only 3.4% of high school graduates, 2% of Bachelor degree holders, and only slightly more than 1% of those who had completed some post-graduate work. High school dropouts were seven times more likely than their peers with post-graduate schooling to have died by 2004.

The statistical associations between levels of schooling and mortality rates were quite strong for both men and women (Table 25, Columns B and C). Approximately 9 per cent of male high school dropouts were deceased, a mortality rate twice as high as that of male high school graduates (4.2%) and 11 times as high as that of males who had completed some post-baccalaureate work. Among women, slightly over 5 per cent of those without a high school diploma were deceased, a mortality rate that was twice as high as that of high school graduates and four times higher than those of women who held a Bachelor's or higher academic degree.

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<sup>45</sup> For a review of the design features of the original NLSY survey and early analyses based on its findings, See: (i) Michael E. Borus (Editor), Pathways to the Future: A Report on the National Longitudinal Survey of Youth Labor Market Experience, Youth Knowledge Development Report 2.7, U.S. Government Printing Office, Washington, D.C., 1980; (ii) Michael E. Borus (Editor), Youth and the Labor Market: Analyses of the National Longitudinal Surveys, W.E. Upjohn Institute for Employment Research, Kalamazoo, Michigan, 1984.

<sup>46</sup> The "potential population" includes those persons who were deceased in 2004 since we wish to calculate a mortality rate for key demographic subgroups of this population. The denominator includes all potential members in this age group.

Table 25:  
Death Rates Among U.S. Adults Who Would Have Been  
39-46 Years Old in 2004, All and by Gender  
(in %)

	(A)	(B)	(C)
Educational Attainment	All	Men	Women
High school dropout	7.4	8.8	5.2
High school diploma	3.4	4.2	2.5
1-3 years of college	2.7	4.1	1.6
Bachelor's degree	2.1	3.0	1.3
Post-graduate work	1.1	.8	1.4
Dropout/BA +	6.7*	11.0*	3.7*
All	3.5	4.5	2.3

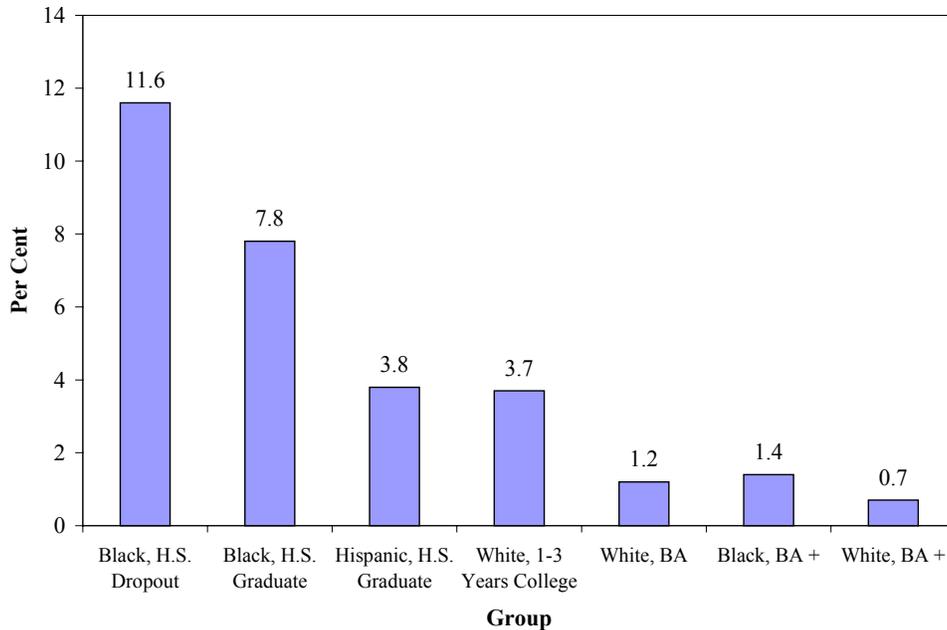
Source: National Longitudinal Survey of Youth (1979), 1980-2004 survey rounds, tabulations by authors.

The death rates of males exceeded those of women both overall and in each educational attainment category except for those completing some graduate work. The mortality rates of males also varied by race-ethnic group with Black males experiencing the highest death rate (8.1%) versus a 5.5% mortality rate for Hispanics and a 3.6% mortality rate for Whites. For each group of males, mortality rates tended to decline with their level of schooling though not uniformly.<sup>47</sup> In each race-ethnic group, male dropouts were the most likely to have died by 2004. The mortality rates of selected race-ethnic/educational attainment subgroups of males are displayed in Chart 20. The mortality rates ranged from a high of 11.6% among Black, male high school dropouts to 3.8% among Hispanic high school graduates to lows of .7 to 1.4 per cent among White and Black males who completed at least one year of schooling beyond the Bachelor's degree. The relative difference in mortality rates between Black, male high school dropouts and White males with some post-graduate schooling was nearly 17 times. Clearly, males who fail to graduate from high school face considerably shorter life expectancies in American society than their better educated peers. Life among many male dropouts, especially Blacks, tends to fit the description of Thomas Hobbes' view of life for man in an original state of nature as "short, nasty, and brutish".

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<sup>47</sup> For example, among both Black and Hispanic males, those with a Bachelor's degree were characterized at times by higher mortality rates than high school graduates with no post-secondary schooling.

**Chart 20:**  
**Death Rates Among Selected Groups of 39-46 Year Old Males**  
**In the U.S. by Race-Ethnic Group and Educational Attainment in 2004**  
**(in %)**



## The Disability Status of Adults in Massachusetts

The disability status of adults across the nation and the state has been found to be strongly linked to their educational status.<sup>48</sup> The American Community Surveys have collected information from respondents on their disability status. Any measure of the “disabled population” is dependent on a definition of the “disabled” and a household survey or administrative data reporting system that will generate the requisite data. The definition of the “disabled” that underlies the estimates of the disabled population in Massachusetts in this paper is the same as that used by the U.S. Census Bureau in its official estimates of the nation’s disabled population from the American Community Survey (ACS) and exactly the same as that used by the Rehabilitation Research and Training Center of Cornell University in its analysis of state and national data from the American Community Surveys.<sup>49</sup> According to this definition, an

<sup>48</sup> See: Andrew Sum, Ishwar Khatiwada, Paulo Tobar, Sheila Palma, et.al., The Adult Disabled Population (16-74) in Massachusetts and the U.S.: Its Size and Demographic/Socioeconomic Composition in 2003-2004, Prepared for The Commonwealth Corporation and Massachusetts Rehabilitation Commission, March 2006.

<sup>49</sup> For a more detailed review of these ACS-based disability concepts and measures, see: Rehabilitation Research and Training Center on Disability Demographics and Statistics, 2004 Disability Status Reports, Cornell University, [www.disabilitystatistics.org](http://www.disabilitystatistics.org).

individual interviewed in the ACS surveys will be classified as “disabled” if he or she meets any one of the following six criteria. The information on disability status is based on the self-reports of respondents to the ACS questionnaire and is not tied to the receipt of any cash assistance from the local, state, or federal government for the disabled or their participation in any type of rehabilitation program. These six criteria are the following:

- Person has any of the following long lasting conditions: blindness, deafness, or a severe vision or hearing problem
- Person has a long lasting condition that “substantially limits one or more basic physical activities,” such as walking, climbing stairs
- Because of a physical, mental, or emotional condition lasting 6 months or more, this person has difficulty “learning, remembering, or concentrating”
- Because of a physical, mental, or emotional condition lasting 6 months or more, this person has difficulty “dressing, bathing, or getting around inside the home”
- Because of a physical, mental, or emotional condition lasting 6 months or more, this person has difficulty “going outside the home alone to shop or visit a doctor’s office”
- Because of a physical, mental, or emotional condition lasting 6 months or more, this person has difficulty “working at a job or business”.

Individual respondents to the ACS survey reporting a disability were allowed to check more than one disability type. As we revealed in an earlier research paper, there is a fairly high degree of overlap among a number of these six disability categories. Persons reporting work-related disabilities often cite one or more other disabilities and are far less likely to be employed.

According to our analysis of findings from the 2005 ACS survey, the incidence of self-reported disabilities varied substantially by level of educational attainment among adults in Massachusetts and the U.S. In Table 26, the incidence of disability problems among non-enrolled 16-64 year olds by their level of educational attainment is displayed for the U.S. and Massachusetts separately. Disability rates were somewhat lower in Massachusetts than in the U.S. for each educational attainment group except for high school dropouts where there was a nearly five percentage point higher rate of disability in our state (27.6% vs. 23.1%). In both the United States and the state of Massachusetts, high school dropouts were the most likely to report

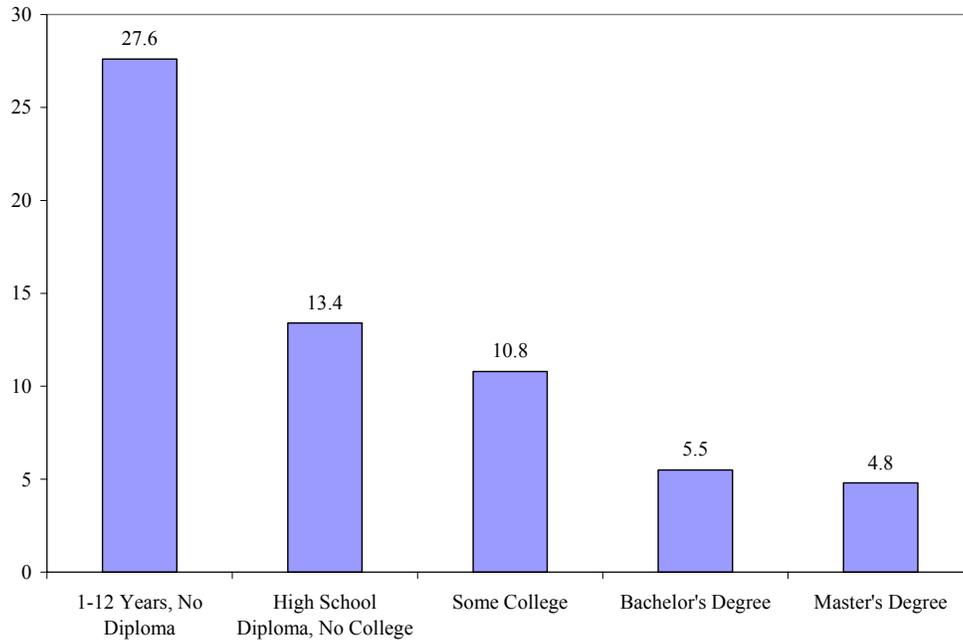
a disability. The reported incidences of disability problems declined steadily with higher levels of educational attainment. In Massachusetts, the incidence of disability problems among high school graduates with no postsecondary schooling was 13.4%, nearly fourteen percentage points or one-half lower than that of high school dropouts (Chart 21). The estimated disability incidence fell to 11% for those individuals with some postsecondary schooling, and the incidence of disability declined to five percent among those adults holding Bachelor, Master or higher academic degrees. A similar pattern between disability rates and schooling levels was observed for adults across the nation (Table 26).

Table 26:  
The Estimated Incidence of Disability Problems Among Non-Enrolled 16-64 Year Old Adults by Level of Educational Attainment, Massachusetts and the U.S., 2005 (in %)

	(A)	(B)
Educational Attainment	Massachusetts	U.S.
1-12 Years, No Diploma	27.6	23.1
High School Diploma, No College	13.4	14.9
Some College, Including Associate Degree	10.8	12.4
Bachelor's Degree	5.5	6.0
Master's Degree	4.8	5.7

Source: 2005 American Community Surveys, public use files, tabulations by authors.

Chart 21:  
Incidence of Disability Problems Among 16-64 Year Olds by  
Level of Educational Attainment, Massachusetts, 2005



### **The Link Between Disability Problems, Educational Attainment, and Employment**

Previous research at the national and state level has shown that the likelihood that a person with a disability will be employed is strongly linked to his or her level of educational attainment.<sup>50</sup> Employment rates for persons with disabilities tend to increase steadily with their level of educational attainment. In Massachusetts in 2005, those individuals with disabilities who lacked a high school diploma were characterized by the lowest employment rate (23%) among the five educational attainment groups (Table 27). In comparison, 35% of those individuals with disabilities that had obtained a high school diploma but no years of post-secondary schooling were employed, on average, during 2005. Employment rates were considerably higher for those individuals with disabilities who held a Bachelor's or higher degree (53 percent and 59 percent, respectively). Similar findings for the disabled prevailed in the U.S. Fewer than one in every four persons with a disability in the U.S. who did not receive a high school diploma reported that they

<sup>50</sup> See: Ishwar Khatiwada, Andrew Sum, Joseph McLaughlin, The Labor Market Experiences of the Disabled Adult Population in Massachusetts, Report Prepared for the Commonwealth Corporation and the Massachusetts Rehabilitation Commission, Boston, 2006.

were working in 2005. In the U.S., the pattern of employment rates of persons with disabilities by level of schooling was quite similar to that observed in Massachusetts (Table 27). The higher the level of schooling, the greater the likelihood that a disabled individual would be employed.

Table 27:  
Employment/Population Ratios of Persons (16-64) With Disabilities by Their Level of Educational Attainment, Massachusetts and the U.S., 2005 (in %)

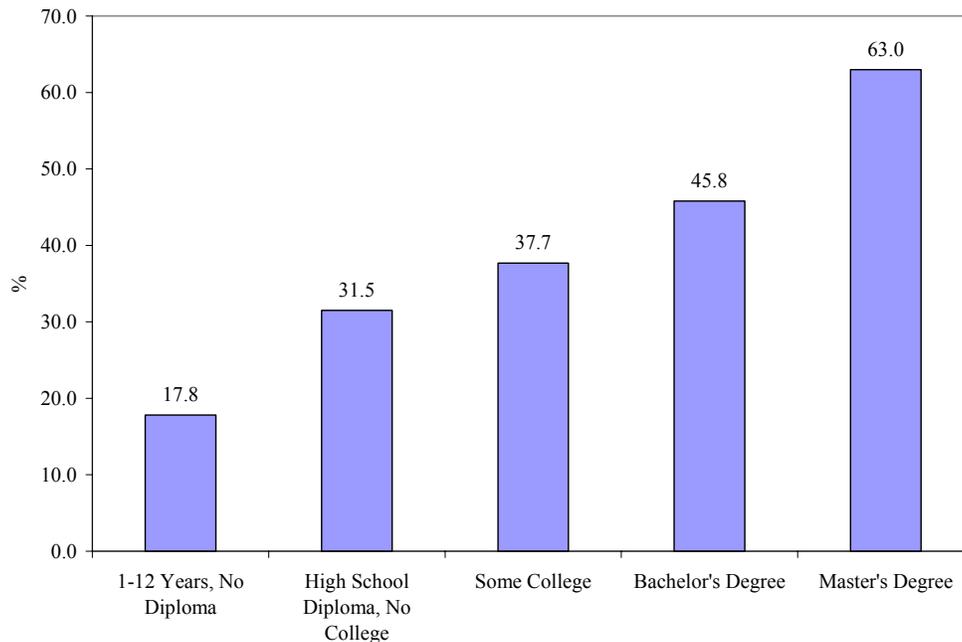
Educational Attainment	(A) Massachusetts	(B) U.S.
<b>All</b>		
Total	37.0	37.4
1-12 Years, No Diploma	22.9	23.9
High School Diploma, No College	35.1	36.6
Some College	42.8	44.0
Bachelor's Degree	52.7	53.4
Master's Degree	59.3	58.3
<b>Men</b>		
Total	41.0	40.7
1-12 Years, No Diploma	27.8	27.8
High School Diploma, No College	38.7	40.9
Some College	50.2	47.0
Bachelor's Degree	61.0	56.7
Master's Degree	54.3	60.7
<b>Women</b>		
Total	33.5	34.2
1-12 Years, No Diploma	17.8	19.9
High School Diploma, No College	31.5	32.4
Some College	37.7	41.5
Bachelor's Degree	45.8	50.3
Master's Degree	63.0	56.1

Source: 2005 American Community Surveys, public use files, tabulations by authors.

The links between educational attainment and employment were particularly strong among disabled women in Massachusetts (Chart 22). Of those women with a reported disability who lacked a high school diploma, only 18% were working on average during 2005. Their employment rate was 14 percentage points below that of high school graduates and 45 percentage points lower than that of their female peers with a Master's or higher degree. Female and male high school dropouts were the most likely to report a disability, and both male and

female dropouts with disabilities had considerably lower employment rates than their more educated counterparts.

Chart 22:  
Employment/Population Ratios Of 16-64 Year Old Women With  
Disabilities By Their Level of Educational Attainment, Massachusetts, 2005  
(in %)



The high levels of joblessness among the state's disabled population, especially among those adults with no high school diploma, would be expected to increase their dependence on some form of cash public assistance income to support themselves and their families, particularly when they would have been expected to be the primary breadwinner of the household. The 2005 ACS survey collected information on the sources of cash income received by respondents during the twelve month period immediately prior to the survey. The survey questionnaire asked respondents to identify their receipt of Supplemental Security Income (SSI) for the disabled, welfare (TANF benefits) and other cash public assistance income, and Social Security disability and retirement income.<sup>51</sup> We identified all 16-60 year old disabled individuals not enrolled in school who reported receiving any cash assistance income from the above three sources in the twelve month period immediately prior to the ACS survey. Estimates of the share of the non-

<sup>51</sup> Individual retirees are not allowed to collect any Social Security retirement income until they are at least 62 years of age although survivors of deceased workers are allowed to collect benefits at earlier ages. The bulk of the Social Security income reported by the disabled in our analysis should be disability income.

enrolled, 16-60 year old disabled population who received some form of cash public assistance income during 2005 by educational attainment group are displayed in Table 28 for both Massachusetts and the U.S.

Table 28:  
Percent of the Non-Enrolled 16-60 Year Old Disabled Population in  
Massachusetts and the U.S. Who Were Dependent on Some Form of  
Cash Public Assistance Income by Educational Attainment, 2005

Educational Attainment	(A)	(B)
	Massachusetts	U.S.
1-12 Years, No Diploma	64.6	50.4
High School Diploma, No College	50.6	43.3
Some College, including Associate Degree	48.7	39.8
Bachelor's Degree	32.9	30.2
Master's Degree	22.8	26.4

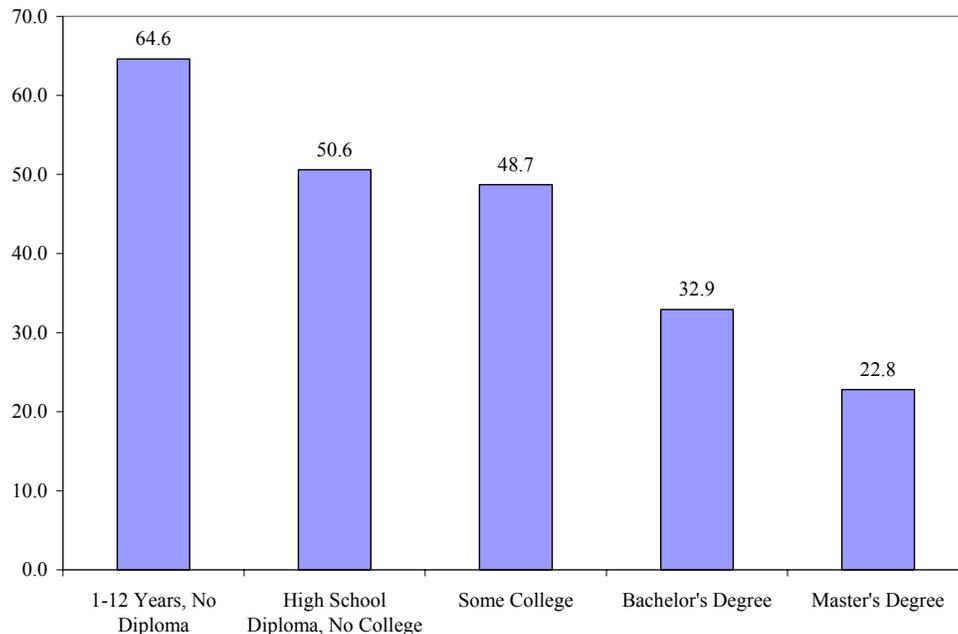
Source: 2005 American Community Survey (ACS), public use files, tabulations by authors.

The reliance of the adult disabled population in Massachusetts upon some form of cash public assistance income to support themselves and their families varied considerably by educational attainment in 2005. Among the disabled lacking a high school diploma or a GED, dependence on cash public assistance income was quite high. Nearly two of every three persons with disabilities in this educational attainment subgroup received some form of cash public assistance income in 2005 versus 51% of high school graduates, 49% of those with 1-3 years of college, and only 33% of those with a Bachelor’s degree. Clearly, disabled high school dropouts in Massachusetts and the U.S. were far more of a fiscal burden to the state and national governments than their better educated peers. As will be revealed in a following section of this report, they also were more likely to receive Medicaid/Medicare benefits, food stamps, rental subsidies, and other forms of in-kind assistance from national, state, and local governments. Findings for the U.S. in calendar year 2004 revealed that disabled adults who were not employed received \$20,000 more per year in cash and in-kind benefits from the federal and state government than they paid in payroll and federal/ state income taxes.<sup>52</sup>

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<sup>52</sup> See: Andrew Sum, Ishwar Khatiwada, with Kamen Madjarov and Sheila Palma, Income Inadequacy Problems Among the Disabled Adult Population in Massachusetts, 2003-2004: Implications for Future State Antipoverty and Workforce Development Policy, Prepared for The Commonwealth Corporation and Massachusetts Rehabilitation Commission, July 2006.

Chart 23:  
Percent of 16-60 Year Old Disabled Adults in Massachusetts Who Were Dependent on  
Some Form of Cash Public Assistance Income by Educational Attainment, 2005



### **The Degree of Overlap Between Disability and Income Inadequacy Problems in Massachusetts and the U.S.**

Given the high levels of joblessness among disabled adults with no high school diploma and their far more limited earnings when they are employed, one would expect a higher incidence of poverty/ near poverty problems among those disabled adults without high school diplomas. The poor are those individuals living in a family with an annual, pre-tax money income below the poverty income thresholds of the federal government. The near poor are those persons living in families with annual, pre-tax money incomes above the poverty threshold but less than 125 percent of the poverty threshold.<sup>53</sup> In Table 29, we have provided estimates of the number of disabled adults in Massachusetts and the U.S. who were poor/near poor in 2005 and the percent of all adults in each educational attainment subgroup who were both disabled and poor/near poor in that year.

<sup>53</sup> The poverty income thresholds are those of the federal government's Office of Management and Budget (OMB). The poverty lines vary by the number of persons in the household and their age distribution but are the same for all states, metropolitan areas, and cities. Given the higher cost of living in the state, the official poverty income thresholds understate the true incidence of poverty problems in the Commonwealth.

In Massachusetts, during 2005, slightly more than 29% of all disabled adults were members of poor or near poor families. The incidence of such income inadequacy problems among the disabled adult population varied quite considerably across educational attainment subgroups, ranging from a high of nearly 44 percent among high school dropouts to 29 percent among high school graduates and to a low of 11 percent among Bachelor degree holders. Very similar patterns between income inadequacy problems and schooling status prevailed among the disabled in the U.S.

Findings on the incidence of disability problems by educational attainment level were combined with those of poor/ near poor problems to estimate the fraction of non-enrolled adults in each educational attainment group who were both disabled and living in families with incomes below 125% of the poverty line. One out of every eight adult dropouts in Massachusetts without a high school diploma were both disabled and living in poverty/ near poverty (Table 29). High school dropouts in Massachusetts were three times as likely as high school graduates to be both disabled and face severe income inadequacy problems, and they were 20 times more likely to be in such a situation as their peers with a Bachelor's degree. Across the nation, high school dropouts also had a high combined rate of disability and poor/near poor problems. Nearly 4 of every 9 high school dropouts with a disability problem in the U.S. had an income below 125% of the federal poverty line. Those adults lacking high school diplomas were much more likely than their better educated peers to report some form of disability and, when disabled, they were much more likely to be poor/ near poor. Problems of poverty/near poverty and disability are closely intertwined in Massachusetts and the U.S., especially among less educated adults and older adults.

Table 29:  
Overlap of Disability and Poor/Near Poor Problems Among Non-Enrolled 16-64 Year  
Olds by Their Level of Educational Attainment, Massachusetts and the U.S., 2005

	(A)	(B)	(C)	(D)	(E)
Area/ Educational Attainment	Total Population	Disabled Population	Poor/Near Poor and Disabled	Percent of the Disabled Who Are Poor/Near Poor	Percent of the Population Who Were Both Disabled and PNP
<b>Massachusetts</b>					
1-12 Years of School, No Diploma or GED High School	362,386	99,889	43,873	43.9	12.1
Diploma/GED	971,954	130,541	38,362	29.4	3.9
Some College	838,674	90,617	23,477	25.9	2.8
Bachelor's Degree	771,850	42,755	4,769	11.2	.6
Master's or Higher Degree	541,737	25,760	3,919	15.2	.7
<b>Total</b>	<b>3,486,601</b>	<b>389,562</b>	<b>114,400</b>	<b>29.4</b>	<b>3.3</b>
<b>United States</b>					
1-12 Years of School, No Diploma or GED High School	23,445,691	5,404,272	2,347,219	43.4	10.0
Diploma/GED	49,603,528	7,411,820	2,118,860	28.6	4.3
Some College	43,973,267	5,453,333	1,237,041	22.7	2.8
Bachelor's Degree	27,834,823	1,666,793	224,888	13.5	.8
Master's or Higher Degree	14,964,253	856,941	83,527	9.7	.6
<b>Total</b>	<b>159,821,562</b>	<b>20,793,159</b>	<b>6,011,535</b>	<b>28.9</b>	<b>3.8</b>

Source: 2005 American Community Surveys, public use files, tabulations by authors.

### **The Institutionalization Status of High School Dropouts in Massachusetts**

An additional adverse social and economic consequence of being a high school dropout, especially among young males and Black males in particular, is a relatively high rate of incarceration in juvenile institutions, jails, and prisons. Nationally, institutionalization rates of men vary considerably by educational attainment, with dropouts being the most prone to be in

jail or prison (Chart 24).<sup>54</sup> Young men with criminal convictions and prior incarceration face severe difficulties in obtaining employment and will earn considerably less than their peers with no criminal records, especially Black males.<sup>55</sup> The limited labor market prospects of ex-offenders in turn place them at high risk of recidivism.

The Public Use Micro Sample (PUMS) data from the 2000 Census were used to estimate the share of 18-64 year old men by level of educational attainment who were institutionalized in juvenile homes, jails, prisons, mental hospitals, and nursing homes in the U.S. at the time of the 2000 Census. The findings indicate that 5.3% of male high school dropouts 18-64 years of age were institutionalized at the time of the 2000 Census. This institutionalization rate of male dropouts was two times as high as that of high school graduates, nearly four times as high as that of men with some college experience, and 18 times higher than that of adult males with a bachelor's or higher degree. Only 3 of 1,000 men in the latter educational group were institutionalized.

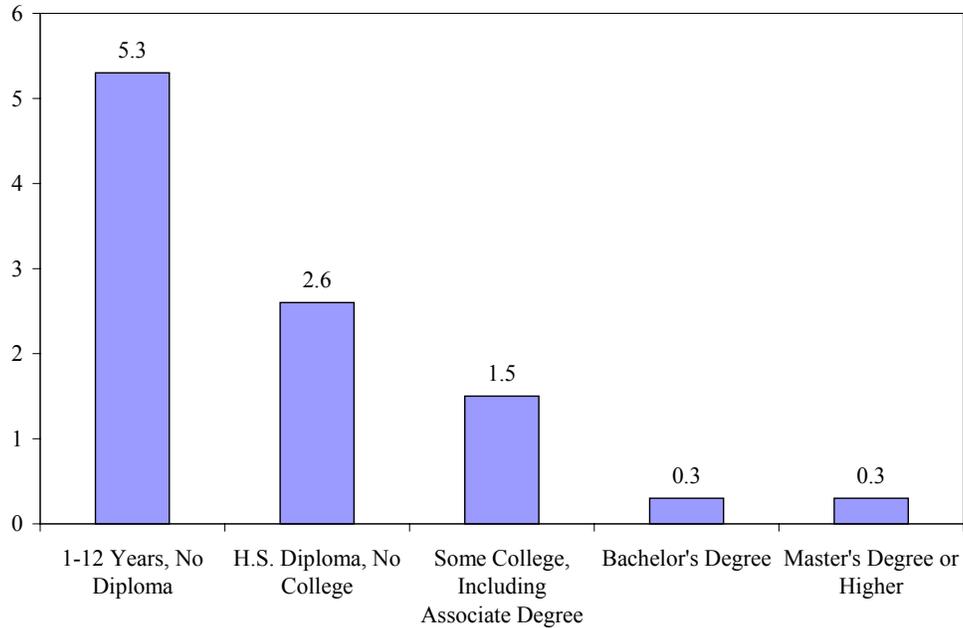
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<sup>54</sup> The institutional population also includes a relatively small number of adults in mental institutions, long stay hospital, and nursing homes.

<sup>55</sup>For evidence on this issue,

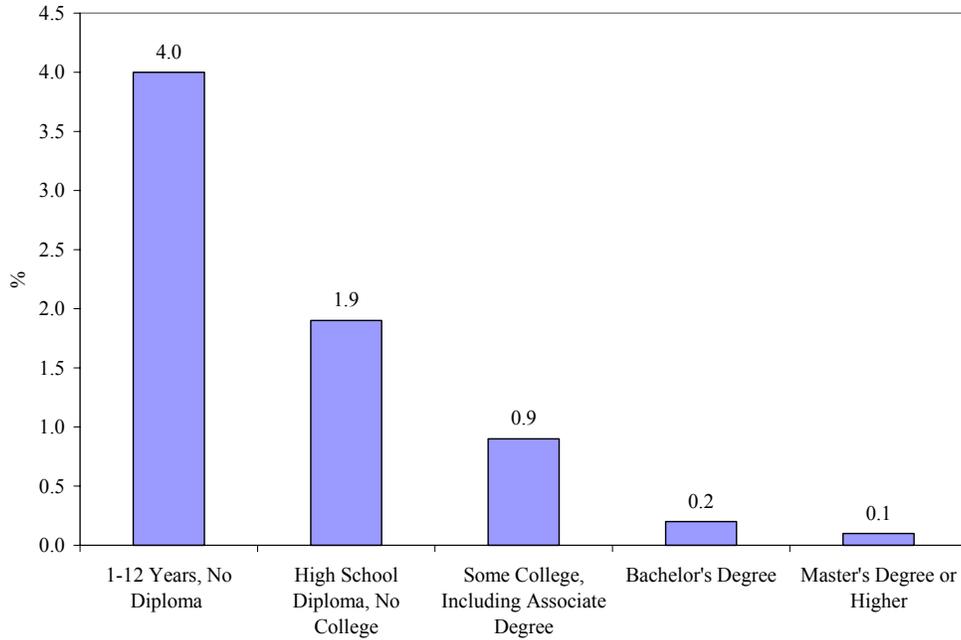
See: (i) Richard Freeman, "Why Do So Many Young Americans Commit Crimes and What Might We Do About It?" *The Journal of Economic Perspectives*, Vol. 10, Winter 1996, pp. 25-42; (ii) Jeffrey Grogger, "The Effect of Arrests on the Employment and Earnings of Young Men," *Quarterly Journal of Economics*, Vol. 110, 1995, pp. 51-72; (iii) Harry J. Holzer, Steven Raphael, and Michael A. Stoll, "How Do Crime and Incarceration Affect the Employment Prospects of Less-Educated Young Black Men?" Center for the Study of Urban Poverty, University of California at Los Angeles, July 2002.

Chart 24:  
Institutionalization Rates of 18-64 Year Old Men by Level of  
Educational Attainment in the U.S., 2000  
 (Excluding Those Enrolled in School)



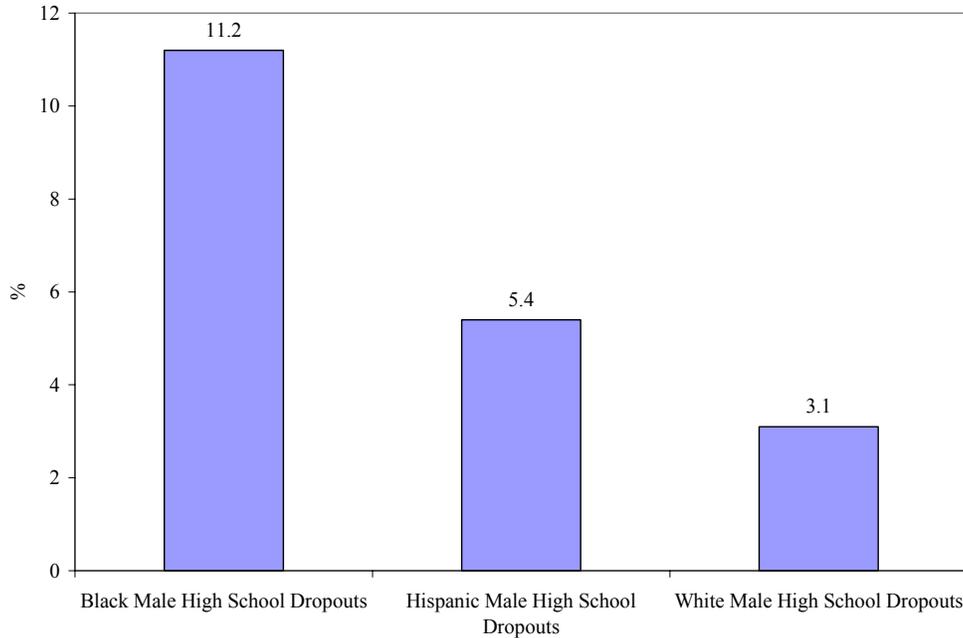
As was the case nationally, institutionalization rates among 18-64 year old men in Massachusetts also varied substantially by educational attainment. Approximately 4% of male high school dropouts residing in Massachusetts at the time of the 2000 Census were institutionalized. This institutionalization rate was 2 times higher than that of high school graduates and 20 times higher than that of persons with a Bachelor's degree (Chart 25). Institutionalization rates are much higher for men than they are for women, with men accounting for 84% of the total institutionalized population in the state.

Chart 25:  
Institutionalization Rates of 18-64 Year Old Men by  
Level of Educational Attainment in the Massachusetts, 2000  
 (Excluding Those Enrolled in School)



Institutionalization rates of male high school dropouts 18 to 64 years of age also varied considerably by race-ethnic group. In Chart 26, the institutionalization rates of male high school dropouts in Massachusetts by their race-ethnic group are presented. Slightly more than 11 percent of Black male high school dropouts in Massachusetts were institutionalized at the time of the 2000 Census. Their rate of imprisonment was twice as high as that of Hispanic male high school dropouts and nearly four times higher than that of White males (18-64).

Chart 26:  
Institutionalization Rates of 18-64 Year Old Male  
High School Dropouts by Race-Ethnic Group, Massachusetts, 2000  
(in %)



In addition to our analysis of the institutionalization data available from the 2000 Census, we obtained more recent administrative data on the jail and prison population in Massachusetts. The Massachusetts Department of Corrections released a report in November of 2005 on the characteristics of inmates housed in federal and state prisons and county jails on January 1, 2005.<sup>56</sup> The January 1, 2005 Inmate Statistics report provides demographic and criminal history information on the Department of Correction’s inmate population. Educational attainment data were collected from about 70 percent of the inmate population. Table 30 displays the educational attainment levels of those inmates that reported their level of educational attainment. Seventy percent of jail/ prison inmates in Massachusetts lacked a high school diploma or GED even though they represented only 12 percent of the state’s resident adult population under 65.

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<sup>56</sup>See: Massachusetts Department of Corrections, Research and Planning Division, January 1, 2005 Inmate Statistics, November 2005.

Table 30:  
Percent Distribution of the Criminally Sentenced Population in Department of Correction  
Facilities by Educational Attainment, January 1, 2005

	(A)	(B)
Educational Attainment	Number	Percent
1-12 Years, No Diploma	4,334	70.4
High School Diploma, No College	1,452	23.6
Some College, Including Associate Degree	258	4.2
Bachelor's Degree	85	1.4
Master's Degree or Higher	29	.4
Total (With Reported Level of Educational Attainment)	6,158	100.0

The data on institutionalization rates from the 2000 Census can be combined with administrative data on the annual per capita cost of housing and supervising jail and prison inmates to estimate the lifetime institutionalization costs associated with dropping out of high school. According to the Massachusetts Department of Corrections, the annual per inmate cost of institutionalization for fiscal year 2006 was \$43,025. By multiplying the institutionalization rate of each educational group of males by the per capita institutionalization cost, we can estimate the average annual costs of institutionalization for males in each educational attainment group. The average, male high school dropout costs the state of Massachusetts approximately \$1,720 in expenditures related to institutionalization per year. The annual costs of institutionalization of high school dropouts are 2 times as high as those of high school graduates without any postsecondary schooling and nearly 20 times higher than those of four-year college graduates. The average annual costs can be summed over the lifetime of an individual from ages 18 to 64 and used to estimate the lifetime costs of institutionalization. By multiplying the average annual costs by 47 years, which is the number of years between 18 and 64 years of age, we can estimate the average lifetime cost of institutionalizing high school dropouts, high school graduates, and males in the other, higher educational subgroups. Column D in Table 31 displays the estimates of these lifetime costs by level of educational attainment. The average lifetime costs of institutionalization for male high school dropouts was just under \$81,000 versus \$38,000 for high school graduates and only \$4,000 for four year college graduates. The lifetime costs of incarcerating male dropouts will exceed those of high school graduates by \$43,000 and bachelor

degree holders by nearly \$77,000. The victimization costs will more than double the incarceration costs. These estimated criminal justice system costs are conservative because they do not include either the costs of victimization by those incarcerated or the costs associated with parole and probation once they leave the prison system.

Table 31:  
Lifetime Per Capita Costs of Institutionalization for Males by  
Educational Attainment, Massachusetts, 2005

	(A)	(B)	(C)	(D)
Educational Attainment	Institutionalization Rate (in %)	Per Capita Cost	Average Annual Cost (in \$)	Average Lifetime Cost of Institutionalization (in \$)
1-12 Years, No Diploma or GED	4.0	43,025	1,721	80,887
High School Diploma, No College	1.9	43,025	817	38,399
Some College, Including Associate Degrees	0.9	43,025	387	18,189
Bachelor's Degree	0.2	43,025	86	4,042
Master's Degree	0.1	43,025	43	2,021

### **The Educational Attainment of Adults in Massachusetts and the U.S. and their Civic Behavior**

The educational attainment and literacy proficiencies of adults in the U.S. tend to be positively associated with their civic behavior, including their voting behavior, participation in civic activities at the local level, and their volunteering behavior.<sup>57</sup> Persons without a high school diploma are typically less likely to be actively engaged in civic duties, including voting in local and national elections, and less likely to volunteer for civic organizations. A society will not foster a strong democracy without active civic engagement. The very fabric of a society is woven together by active civic engagement on the part of its citizens, strengthening unity and a sense of belongingness, and instilling a sense of responsibility among citizens.

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<sup>57</sup> These relationships between the literacy proficiencies/schooling and civic behavior of adults hold true for both immigrant and native born adults. For a review of the links between the literacy proficiencies of immigrants and their civic and volunteering behavior, See: Andrew Sum, Irwin Kirsch, and Kentaro Yamamoto, A Human Capital Concern: The Literacy Proficiency of U.S. Immigrants, Policy Information Center, Educational Testing Service, Princeton, 2004.

While many of the nation's Founding Fathers were optimistic about the possibilities for democratic government to take hold in the former colonies, they recognized the importance of a civically active and informed citizenry for democracy to prevail. According to Dumas Malone in his multi-volume biography of Thomas Jefferson, Jefferson believed that "If the people in the United States should become inattentive to public affairs,... all officers of government, including himself, would become wolves."<sup>58</sup>

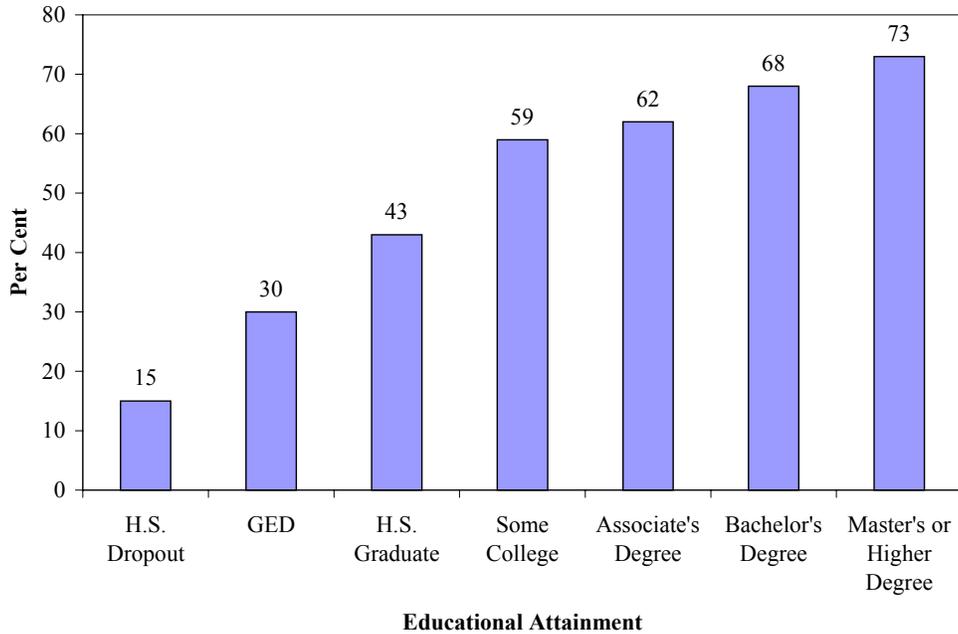
There is a plethora of empirical evidence on education being a strong predictor of civic engagement. The more education a person has, the more likely that he or she will participate in civic affairs. A number of studies in recent years have consistently found that the U.S. has experienced a severe decline in civic participation since the early 1980s.<sup>59</sup> Longitudinal surveys of young adults in the U.S. have found that their voting registration and voting behavior is strongly associated with their educational attainment. The 2000 survey round of the National Education Longitudinal Survey (NELS) of the eighth grade class of 1988 captured information on their voting behavior in the 1996 presidential election. Findings of our analysis of the voting behavior of these young adults (21 to 24) by their educational attainment as of 2000 are displayed in Chart 30. Voting rates of these young adults rose steadily and strongly with their levels of formal schooling. Only 15 per cent of young high school dropouts voted in 1996 versus 43 per cent of regular high school graduates, 59 to 62 per cent of those with one to three years of college, and 68 to 73 per cent of those with a Bachelor's or higher academic degree. Among these young high school dropouts, voting rates were lowest among those in the lowest quintile of the reading/math score distribution. Only 13 per cent of dropouts in the lowest skills quintile voted versus 20 per cent of those in the second and middle quintiles of the distribution. Young adults with strong reading/math skills (top quintile) and a Bachelor's degree were five to six times more likely to vote than dropouts with very limited reading/math skills. The latter group of young adults has voluntarily disenfranchised themselves from the American political system.

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<sup>58</sup> See: Dumas Malone, Jefferson and the Rights of Man, Little, Brown, and Company, Boston, 1951.

<sup>59</sup> (i) See: Sidney Verba, Kay Lehman Schlozman, Henry Brady, Voice and Equality: Civic Voluntarism in American Politics, Harvard University Press, Cambridge, Massachusetts, 2006; (ii) See: Robert D. Putnam, Bowling Alone: The Collapse and Revival of American Community, Simon and Schuster, 2000; (iii) See: Thomas Ehrlich (Editor), Civic Responsibility and Higher Education, The American Council on Education, The Oryx Press, Phoenix, Arizona, 2000.

Chart 27:  
Per Cent of 21-24 Year Olds Who Voted in the  
1996 Presidential Election by Educational Attainment, U.S.

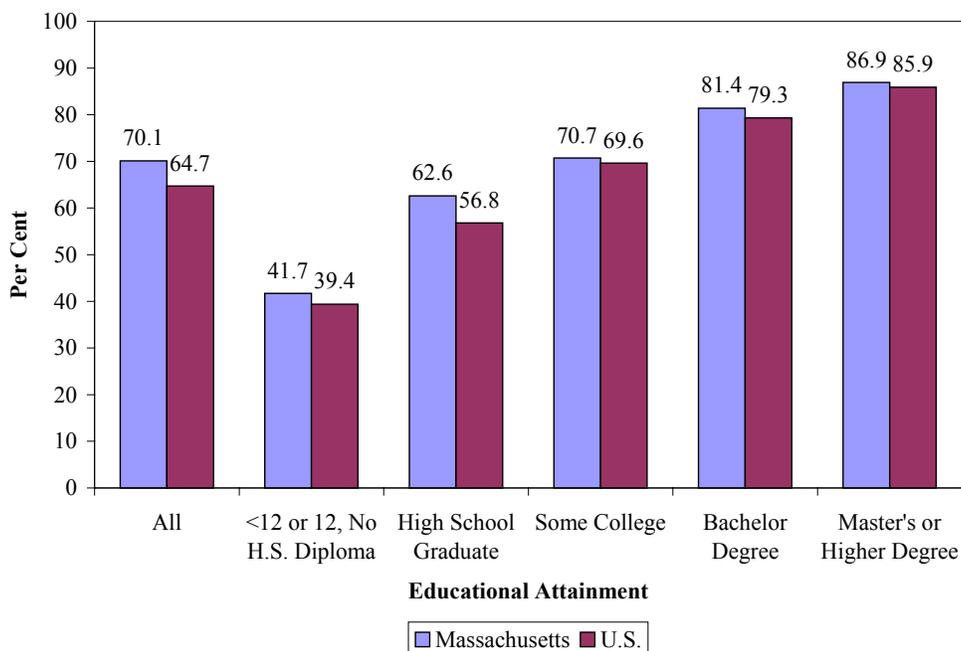


More recent data on the voting behavior of Massachusetts and U.S. adults (voter eligible adults 18 and older) in the 2004 presidential election are available from a fall 2004 supplement to the standard monthly CPS labor force questionnaire. The U.S. Census Bureau conducted the November 2004 Voting and Registration Survey as a supplement to that month's Current Population Survey (CPS). The November supplement surveys are conducted in national election years. The supplement questions on voting and registration behavior are asked of all persons 18 and older.

We analyzed the survey findings related to November 2004 voting behavior for all voting eligible persons (18 years and older U.S. citizens) in Massachusetts and the U.S. Chart 31 displays the estimated per cent of citizens 18 and older in Massachusetts and the U.S. who voted in the November 2004 presidential election by their education attainment level. The voting rates of adults in both the state and the nation varied widely by their level of schooling. In every educational attainment category, Massachusetts citizens voted at a modestly higher rate than their national counterparts. However, only 42% of Massachusetts citizens without a high school diploma voted in the November 2004 election despite the fact that the Democratic presidential candidate was from Massachusetts. The voting rates of Massachusetts adults rose steadily with

their educational attainment level. Approximately 63% of high school graduates voted in the November 2004 election, 71% of those with some college did so, and 81% to 87% of those with a Bachelor’s and Master’s degree voted in Massachusetts. Adults with a Bachelor’s or Master’s degree in our state were twice as likely to vote as high school dropouts.

**Chart 28:**  
Per Cent of Voting Eligible Adults (18 and Older) Who Voted in the November 2004 Election by Level of Educational Attainment, Massachusetts Versus the U.S.

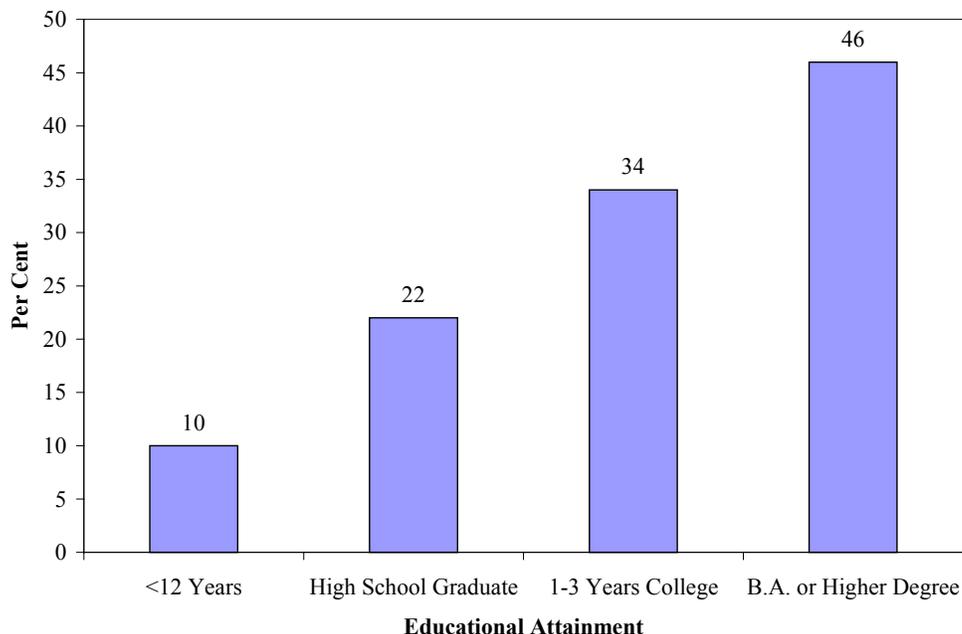


Surveys of the volunteering activities of U.S. adults in recent years also reveal a strong association between the incidence, breadth, and types of volunteer activities and educational attainment. In September 2003, the U.S. Census Bureau interviewed a large sample of U.S. adults 16 and older to obtain information on their volunteering activities in the 12 month period, September 2002 to September 2003.<sup>60</sup> “Volunteer work” is unpaid work performed for an organization. Approximately 28 per cent of all U.S. adults 25 and older reported that they performed some volunteer work in the prior twelve month period. The fraction of adults (25+) reporting some volunteer work varied widely by educational attainment, ranging from a low of 10 per cent among high school dropouts, to 22 per cent for high school graduates with no post-

<sup>60</sup> The questionnaire on volunteer activities was designed as a supplement to the standard September CPS questionnaire.  
 See: U.S. Department of Labor, Bureau of Labor Statistics, Volunteering in the United States, 2003, Washington, D.C., December 17, 2003.

secondary schooling, and to a high of 46 per cent among adults with a Bachelor’s or higher academic degree (Chart 32). These college educated adults with a bachelor’s or higher degree were nearly five times more likely to perform some volunteer work than their peers who lacked a high school diploma or a GED certificate.

Chart 29:  
Per Cent of U.S. Adults 25 and Older Who Did  
Volunteer Work in 2003 by Educational Attainment



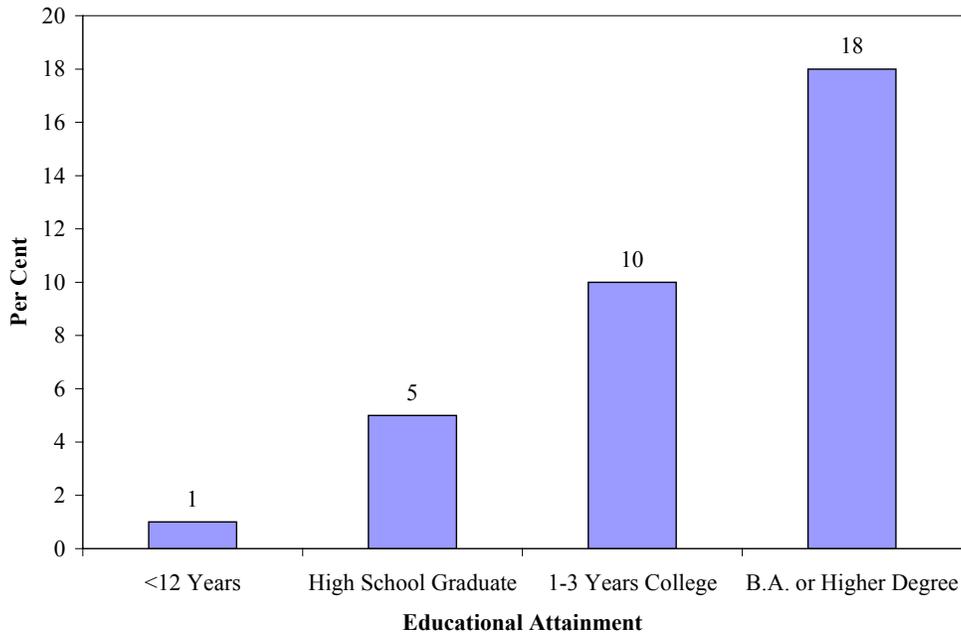
Better educated adults were not only more likely to volunteer overall, but they also were more likely to volunteer for two or more organizations, and were more likely to do volunteer work for civic, educational, environmental, or health organizations.<sup>61</sup> Only 1 in 100 adults without a high school diploma performed volunteer work for two or more organizations versus nearly 6 of 100 high school graduates and 18 of every 100 adults with a four year college degree. High school dropouts in the U.S. are, thus, far less civically engaged than their better educated peers and considerably less likely to provide volunteer services to their fellow citizens. On average, they are much less economically, politically, and civically productive than their peers with higher levels of schooling. The gaps in some civic behaviors, such as voter registration and

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<sup>61</sup> Only 13 per cent of adult volunteers without a high school diploma volunteered for 2 or more organizations versus 27 per cent of high school graduates and 41 per cent of adults with a Bachelor’s or higher degree.  
Ibid.

actual voting, between the best and least well educated adults in the nation also have been found to be growing over time.

Chart 30:  
Per Cent of U.S. Adults 25 and Older Who Did Volunteer Work for  
Two or More Organizations in 2003 by Educational Attainment



### **Receipt of Cash Public Assistance Income Among Massachusetts Adults by Their Level of Educational Attainment in 2005**

The limited annual earnings of employed, adult high school dropouts in Massachusetts and their much higher rates of year-round joblessness can be expected to increase their reliance on various forms of cash public assistance income to support themselves. In this section, we will estimate the share of all high school dropouts in the state of Massachusetts that received cash income support in 2004-2005 from one of the following three sources of cash public assistance income: Supplemental Security Income for the Disabled (SSI), welfare (TANF benefits) and other cash public assistance income, and Social Security disability and retirement income.<sup>62</sup> Estimates of the share of the state's non-enrolled 16-60 year old population who received some

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<sup>62</sup> Individual retirees are not allowed to collect any Social Security retirement income until they are at least 62 years of age although survivors of deceased Social Security contributors are allowed to collect at earlier ages. The bulk of the Social Security income reported by the disabled in our analysis should be disability income rather than retirement income.

form of cash public assistance income during 2004-2005 by educational attainment group are displayed in Table 32 for both Massachusetts and the U.S.

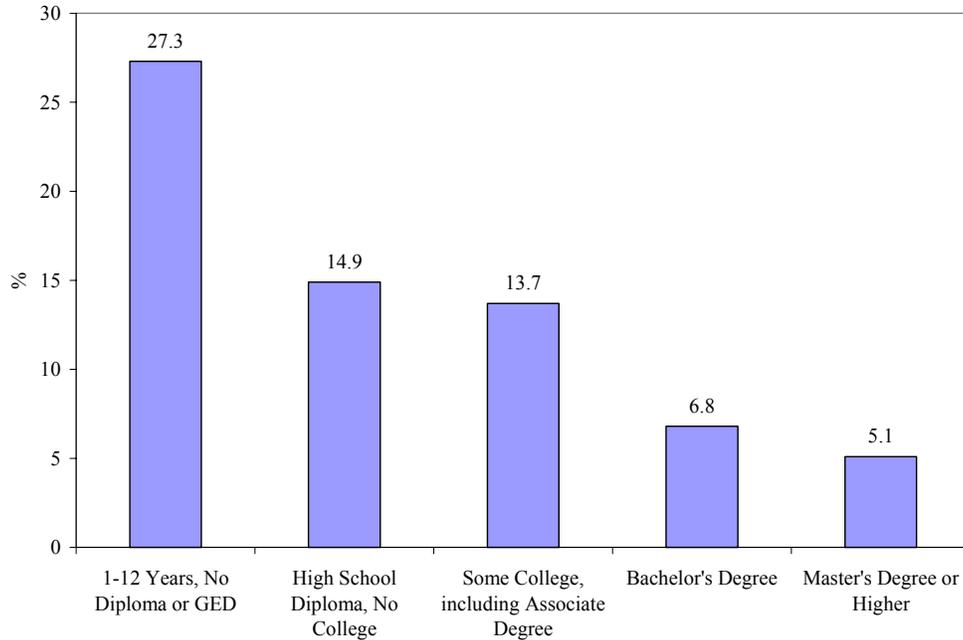
The likelihood that an adult in Massachusetts received some type of cash public assistance income in 2004-2005 varied systematically by their years of schooling completed. Approximately 27 of every 100 adults lacking a high school diploma or a GED certificate were recipients of some type of cash public assistance income versus 15 percent of high school graduates, nearly 14 percent of those adults with one to three years of college, and only 7 percent of adults with a bachelor’s degree (Chart 27). Very similar patterns prevailed in the U.S. where nearly 19 of every 100 adults without a high school diploma or GED were dependent on some form of cash public assistance income versus only 6 percent of similar-aged adults with a Bachelor’s or higher degree. It should be noted, however, that adult dropouts in Massachusetts were considerably more dependent than their U.S. counterparts on some form of cash public assistance income to support themselves (27% vs. 19%), indicating more severe structural labor market problems among dropouts in our state.

Table 32:  
Percent of the 16-60 Year Old Population in Massachusetts and the U.S. Who Were Dependent on Some Form of Cash Public Assistance Income by Educational Attainment, 2005

	(A)	(B)
Educational Attainment	Massachusetts	U.S.
1-12 Years, No Diploma or GED	27.3	19.0
High School Diploma, No College	14.9	13.9
Some College, including Associate	13.7	12.5
Bachelor’s Degree	6.8	6.4
Master’s Degree	5.1	5.1

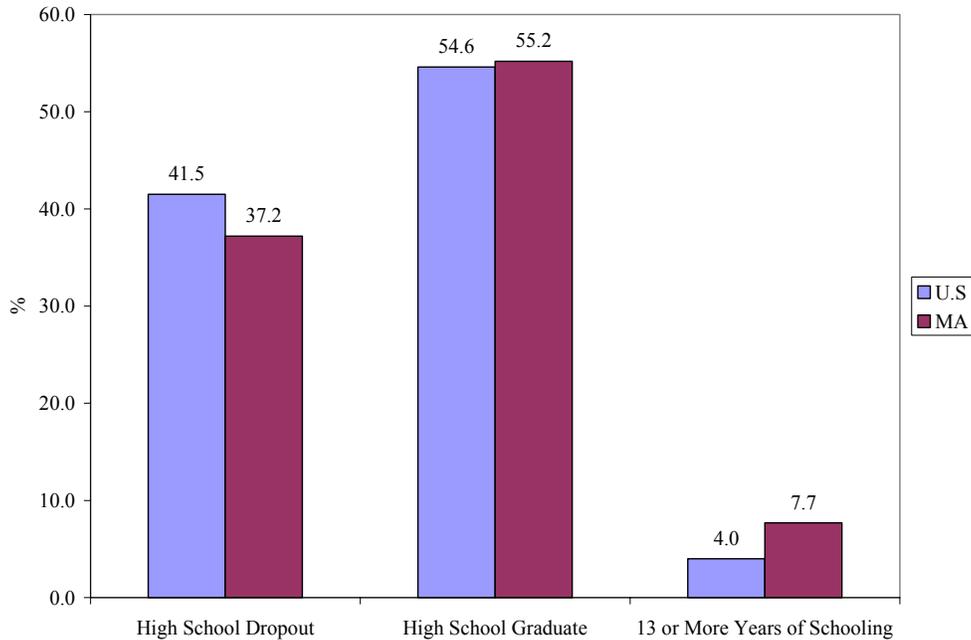
Source: 2005 American Community Surveys, public use files, tabulations by authors.

Chart 31:  
Percent of the 16-60 Year Old Population in Massachusetts Who Were Dependent on Some  
Form of Cash Public Assistance Income by Educational Attainment, 2005



In addition to analyzing the ACS public use data files on public assistance income receipt, we also obtained administrative data on the educational characteristics of the recipients of benefits under the Temporary Assistance for Needy Families (TANF) program in both Massachusetts and the U.S during the October 2003 – September 2004 period. The administrative data base for the TANF program shows that a substantial share of the TANF caseload in both Massachusetts and the U.S. lacked a high school diploma. Of all the adults in Massachusetts receiving TANF benefits, slightly over 37% did not graduate from high school, a slightly lower share than the national average (41.5%). Approximately 55% of TANF recipients in Massachusetts were high school graduates, reflecting the deteriorating rates of marriage among high school educated women in the state. Only 8% of the TANF recipients had completed one or more years of post-secondary schooling.

Chart 32:  
Percent Distribution of Adult TANF Recipients by Level of Educational Attainment,  
Massachusetts and U.S., October 2003-September 2004



Source: U.S. Department of Health and Human Services, Administration for Children and Families

The administrative data on the educational characteristics of TANF recipients in our state can be combined with ACS data on the educational characteristics of 18-44 year old women in Massachusetts (the primary recipients of TANF benefits) to estimate the relative incidence of TANF receipt among educational subgroups of adult women in the state in recent years. Those adult women lacking a high school diploma represented only 8% of the female 18-44 year old population in Massachusetts yet they accounted for 37% of all TANF recipients. Thus, they were over-represented in the ranks of the TANF population relative to their share of the resident population by a multiple of 4.6 to 1. High school graduates accounted for 23.8% of 18-44 year old women in the state but they represented 55% of TANF recipients. Thus, they were over-represented in the ranks of the TANF beneficiary pool by a multiple of 2.3 to 1. In sharp contrast, adult women (18-44 years old) with one or more years of post-secondary schooling accounted for only 7.7% of TANF recipients in Massachusetts during the 2004 fiscal year even though they represented nearly 68% of the adult female population in that age group during 2005. Thus, women with one or more years of post-secondary schooling were substantially under-represented in the ranks of TANF recipients. A female high school dropout in

Massachusetts was twice as likely as a high school graduate and 42 times more likely than her peers with some post-secondary schooling to be dependent on the TANF program for at least some portion of her economic sustenance in 2004.

Table 33:  
The Educational Distribution of TANF Recipients and the  
18-44 Year Old Female Population in Massachusetts During 2004

	(A)	(B)	(C)
Educational Characteristics	Percent of Female Population 18-44 years old	Percent of TANF Recipients	Relative Incidence of TANF Beneficiaries (Col. B/ Col. A)
1-12 Years, No Diploma or GED	8.0	37.2	4.65
High School Diploma, No College	23.8	55.2	2.32
13 or More Years of Schooling	68.2	7.7	.112

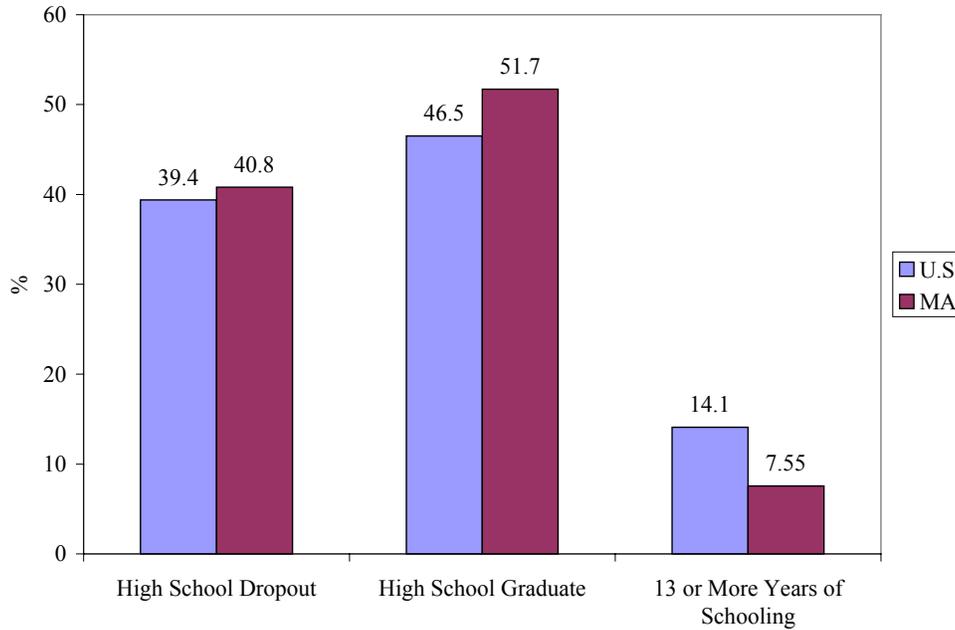
Sources: (i) 2005 ACS Surveys, public use files.

(ii) U.S. Department of Health and Human Services, Administration for Children and Families.

### **Receipt of Food Stamps Benefits Among Massachusetts Adults by Level of Education Attainment in 2005**

The United States Department of Agriculture also provides educational attainment data on recipients of Food Stamp benefits. The findings are very similar to that of the TANF program. Of all the adults in Massachusetts receiving Food Stamp benefits, approximately 41% were high school dropouts, a slightly higher share than the national average (39%). High school graduates without post-secondary schooling accounted for 52% of the food stamp beneficiaries. Only 7.6% of beneficiaries in Massachusetts had 13 or more years of schooling, only one-half as high as the national share of food stamp beneficiaries (14%).

Chart 33:  
Percent Distribution of Food Stamp Beneficiaries by  
Level of Educational Attainment, Massachusetts and U.S., 2005



Source: Office of Analysis, Nutrition, and Evaluation, United States Department of Agriculture

Similar to our previous analysis of the educational characteristics of TANF recipients, we combined the characteristics of food stamp beneficiaries with the educational characteristics of all 18 to 64 year olds in Massachusetts to estimate the relative incidence of food stamp receipt among educational subgroups of the state’s adult, non-elderly population. Although high school dropouts accounted for only 12.7% of the state’s adult population 18-64 years of age, they represented 41% of the food stamp beneficiaries in the state. High school dropouts were over-represented in the ranks of the Food Stamp population relative to their share of 18-64 year olds by a multiple of 3.2 to 1. On the other hand, 60% of the 18-64 year old population had 13 or more years of school yet they represented only 7.5% of food stamp beneficiaries in Massachusetts. A high school dropout in Massachusetts was 25 times more likely than an adult with 13 or more years of schooling to receive food stamp benefits.

Table 34:  
The Educational Distribution of Food Stamp Recipients and the 18-64 Year Old Adult Population in Massachusetts During 2004

	(A)	(B)	(C)
Educational Attainment	Percent of Population 18-64	Percent of Food Stamp Benefit Recipients	Relative Incidence of Food Stamp Beneficiaries (Col. B/ Col. A)
1-12 Years, No Diploma or GED	12.7	40.8	3.21
High School Diploma, No College	27.0	51.7	1.91
13 or More Years of Schooling	60.2	7.5	.124

Sources: (i) 2005 ACS Surveys, public use files;  
(ii) U.S. Department of Agriculture, Office of Analysis, Nutrition, and Evaluation.

### **The Fiscal Consequences of Dropping Out of High School**

Dropping out of high school can have dire economic consequences not only for the individuals dropping out, but also for local, state and federal governments. Given the lower average annual earnings of employed high school dropouts and their much higher rates of year-round joblessness in comparison to their better-educated peers, they can be expected to pay considerably fewer dollars in Social Security payroll taxes and state/federal income taxes than their better-educated peers in both the state and the nation. High school dropouts are also less likely to own homes, and they pay less in property taxes at the local level when they do own their homes. High school dropouts also impose higher fiscal burdens on state and federal governments than persons with high school diplomas and post-secondary schooling because they are more likely to depend on government for cash and non-cash transfer incomes, such as food stamps and rental subsidies and Medicaid, to support themselves. To quantify the size of these tax payments to the state and federal government and the monetary value of the cash and in-kind transfers that they received, we analyzed data from the March 2003 and March 2005 Current Population Survey Supplements from the U.S. Census Bureau. The March CPS household survey contains a work experience and income supplement that collects a wide array of data from households on their income sources during the previous calendar year as well as their receipt of a wide array of

in-kind benefits, including food stamps, rental subsidies, federal and state earned income tax credits, energy assistance and Medicaid/Medicare benefits.<sup>63</sup>

The Census Bureau imputes estimates of the likely amount of Social Security payroll taxes, federal retirement contributions, state income, and federal income taxes paid by each working-age individual based on their annual incomes, marital status, and family living arrangements. We have combined the estimated tax payments, cash transfer incomes (including federal and state earned income tax credits), and in-kind benefits to calculate the net fiscal impact of each non-enrolled, 16-64 year old adult in Massachusetts and the U.S. by their educational attainment level during calendar years 2002 and 2004.<sup>64</sup> Table 35 displays a listing of the tax items, cash transfers, and non-cash transfers included in our fiscal cost-benefit analysis for government. The fiscal analysis was undertaken for all 16-64 years old adults not enrolled in school and for men and women separately.

For five educational groups of these non-enrolled 16-64 year olds, we have estimated the value of the combined income and payroll taxes that they paid during the calendar year and the value of the cash and in-kind transfers that they received.<sup>65</sup> The net fiscal benefits to the federal and state government are equal to the difference between the annual taxes paid by an individual and the value of the cash and in-kind transfers that he/she received during calendar years 2002 and 2004.

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<sup>63</sup> Information on the design of the March CPS supplement questionnaire can be found on the U.S. Census Bureau's web site. See: [www.census.gov](http://www.census.gov), "2005 Annual Social and Economic Supplement (ASEC)."

<sup>64</sup> The combined sample from the two surveys was used to obtain a larger sample size for the estimates of these net fiscal benefits. Two year weighted averages were used to represent the results.

<sup>65</sup> Food stamps, rental subsidies, and energy assistance are received by the household rather than by an individual unless he/she is living alone. For each adult, we assigned him/her the value of these benefits received by the household in which he/she lived.

Table 35:  
A Listing of the Cash Transfer, Non-Cash Transfer, and  
 Tax Items Used in Conducting the Fiscal Impact Analysis

<b>Total Costs to Government</b>		<b>Total Benefits to Government</b>
<b>Cash Transfers</b>	<b>Non-Cash Transfers</b>	<b>Tax Income</b>
Unemployment benefits	Earned Income Tax Credits	Federal income tax liability
Worker's compensation	Market value of food stamps	State income tax liability
Social Security payments	Market value of Medicare insurance	Federal retirement payroll deductions
Supplemental Social Income for the disabled and aged	Market value of Medicaid benefits	Social Security retirement payroll taxes
Public assistance income	Family market value of housing subsidies	
Veteran's payments	Family market value of school lunch subsidies	
Survivor's income benefits	Energy assistance payments	
Other disability income		

How much did adults with different levels of schooling pay on average to the government in the form of Social Security, state and federal income taxes and how much did they receive in the form of both cash and non-cash transfer incomes in recent years in our state and the nation? Table 36 provides estimates of these values for 16-64 year old adults in Massachusetts and the U.S. These estimates are two-year annual averages for calendar years 2002 and 2004 adjusted for inflation as measured by the national Consumer Price Index for All Urban Consumers (CPI-U).

In both Massachusetts and the U.S., the mean annual amount of taxes paid to the government by 16-64 year olds varied quite widely by their level of educational attainment. In Massachusetts, persons without a high school diploma or a GED certificate paid only an average of \$2,498 in taxes to the government whereas high school graduates paid \$5,456, Bachelor degree holders paid \$14,769, and persons with a Master's or more advanced degree paid \$20,753. (Table 36 and Chart 34). The average high school graduate in Massachusetts paid 2.2 times as much as a high school dropout in income and payroll taxes, and a four-year college graduate paid six times as much. A very similar pattern of findings prevailed in the U.S. On the other side of the ledger, the mean dollar value of the cash and non-cash transfers received by less educated persons was higher in comparison to those of their more educated peers. In

Massachusetts, the estimated annual average cost to the state and federal government from the payment of cash and non-cash transfers was highest for adults lacking high school diplomas and lowest for those with a post-graduate degree. The mean annual average value of these costs ranged from highs of \$7,798 for a person without a high school diploma to only \$3,332 for those persons with a high school diploma/GED, and to lows of \$854-\$1,150 for Bachelor and Master degree holders. In the U.S., the size patterns of these cash and in-kind benefits by educational attainment were quite similar to those in Massachusetts except that the average transfer burden of high school dropouts was considerably smaller in the U.S. (\$4,437 versus \$7,798). (Chart 35).

Given the estimates of mean tax payments and cash/in-kind transfers, we calculated the mean net fiscal benefits for each educational subgroup. Overall, the net fiscal benefits (mean taxes paid-mean transfer incomes) accruing to state and national governments ranged from -\$5,300 for persons without a high school diploma or GED certificate to +\$2,125 for high school graduates, +\$5,449 for persons with some college, +\$13,620 for Bachelor degree holders, and just under \$20,000 for those with a Master's or higher degree. (Chart 36). Due to their high annual earnings, the annual values of these net fiscal benefits for men in each educational category were higher than those of their female counterparts. Similar gender patterns prevailed in the U.S. (Table 36).

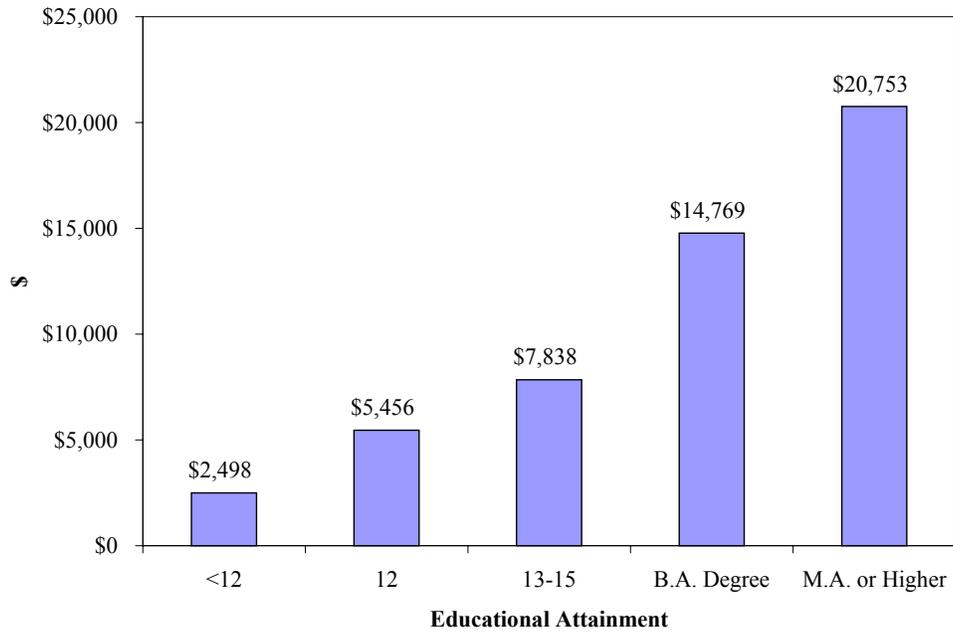
The mean differences between the annual net fiscal benefits of high school graduates with no post-secondary schooling and of high school dropouts in Massachusetts was equal to \$7,425. If these mean fiscal differences prevailed for each year over the 18-64 year age interval (a 47 year period), the lifetime differences in net fiscal benefits between high school graduates and dropouts would be equal to nearly \$349,000 excluding the higher fiscal costs associated with incarcerating dropouts in the state's jails and prisons, especially among males. Including these incarceration costs would raise the net lifetime fiscal benefits of high school graduates above those of high school dropouts by approximately.

**Table 36:**  
**Estimates of Annual Average Tax Payments, Cash Transfers and Non-Cash**  
**Transfers of Non-Enrolled 16-64 Year Old Men and Women in Massachusetts and the U.S.,**  
**Total and by Their Educational Attainment Level**  
**(2002 and 2004 Weighted Averages in 2004 Dollars)**

		(A)	(B)	(C)	Total	Taxes
<b>Massachusetts</b>	Educational Attainment	Taxes Paid	Cash Transfers	In-Kind Benefits	Transfers (B+C)	Paid-Transfers (B+C)-A
Male	<12 or 12, No HS Diploma	\$3,337	\$3,297	\$3,851	\$7,148	-\$3,810
	HS Graduate or GED	\$6,607	\$1,903	\$1,360	\$3,263	\$3,344
	1-3 Years of College	\$9,138	\$1,695	\$730	\$2,425	\$6,713
	Bachelor's Degree	\$15,693	\$879	\$451	\$1,330	\$14,363
	Master's or Higher	\$24,199	\$447	\$200	\$647	\$23,552
	Total	\$11,616	\$1,542	\$1,110	\$2,652	\$8,964
Female	<12 or 12, No HS Diploma	\$1,594	\$2,995	\$5,505	\$8,500	-\$6,906
	HS Graduate or GED	\$4,141	\$1,432	\$1,977	\$3,410	\$731
	1-3 Years of College	\$6,858	\$1,343	\$1,019	\$2,362	\$4,496
	Bachelor's Degree	\$13,896	\$676	\$303	\$979	\$12,917
	Master's or Higher	\$16,948	\$864	\$220	\$1,084	\$15,864
	Total	\$8,751	\$1,294	\$1,427	\$2,721	\$6,030
All	<12 or 12, No HS Diploma	\$2,498	\$3,151	\$4,647	\$7,798	-\$5,300
	HS Graduate or GED	\$5,456	\$1,683	\$1,648	\$3,332	\$2,125
	1-3 Years of College	\$7,838	\$1,494	\$895	\$2,389	\$5,449
	Bachelor's Degree	\$14,769	\$775	\$375	\$1,150	\$13,620
	Master's or Higher	\$20,753	\$645	\$209	\$854	\$19,899
	Total	\$10,175	\$1,417	\$1,269	\$2,687	\$7,489
<b>United States</b>						
Male	<12 or 12, No HS Diploma	\$3,076	\$2,014	\$1,974	\$3,988	-\$911
	HS Graduate or GED	\$6,152	\$1,595	\$990	\$2,584	\$3,567
	1-3 Years of College	\$8,971	\$1,494	\$598	\$2,092	\$6,879
	Bachelor's Degree	\$15,364	\$960	\$273	\$1,233	\$14,131
	Master's or Higher	\$24,329	\$1,054	\$211	\$1,266	\$23,063
	Total	\$9,806	\$1,464	\$832	\$2,296	\$7,510
Female	<12 or 12, No HS Diploma	\$1,425	\$2,061	\$2,890	\$4,951	-\$3,526
	HS Graduate or GED	\$3,480	\$1,479	\$1,298	\$2,777	\$704
	1-3 Years of College	\$5,392	\$1,302	\$874	\$2,176	\$3,217
	Bachelor's Degree	\$9,324	\$788	\$349	\$1,138	\$8,186
	Master's or Higher	\$13,445	\$638	\$215	\$853	\$12,593
	Total	\$5,740	\$1,297	\$1,102	\$2,399	\$3,342
All	<12 or 12, No HS Diploma	\$2,305	\$2,036	\$2,401	\$4,437	-\$2,132
	HS Graduate or GED	\$4,826	\$1,537	\$1,143	\$2,680	\$2,146
	1-3 Years of College	\$7,050	\$1,391	\$746	\$2,137	\$4,913
	Bachelor's Degree	\$12,228	\$871	\$313	\$1,184	\$11,044
	Master's or Higher	\$19,087	\$854	\$213	\$1,067	\$18,021
	Total	\$7,749	\$1,380	\$968	\$2,348	\$5,401

**Source:** March 2003 and 2005 CPS Work Experience and Income Supplements, U.S. Census Bureau, tabulations by authors.

**Chart 34:**  
Mean Annual Payroll and Federal/State Income Taxes Paid by Non-Enrolled 16-64 Year Old Adults in Massachusetts by Educational Attainment, 2002-2004 Averages



**Chart 35:**  
Mean Annual Value of Cash and In-Kind Transfers Received by Non-Enrolled 16-64 Year Old Adults in Massachusetts by Educational Attainment, 2002-2004 Averages

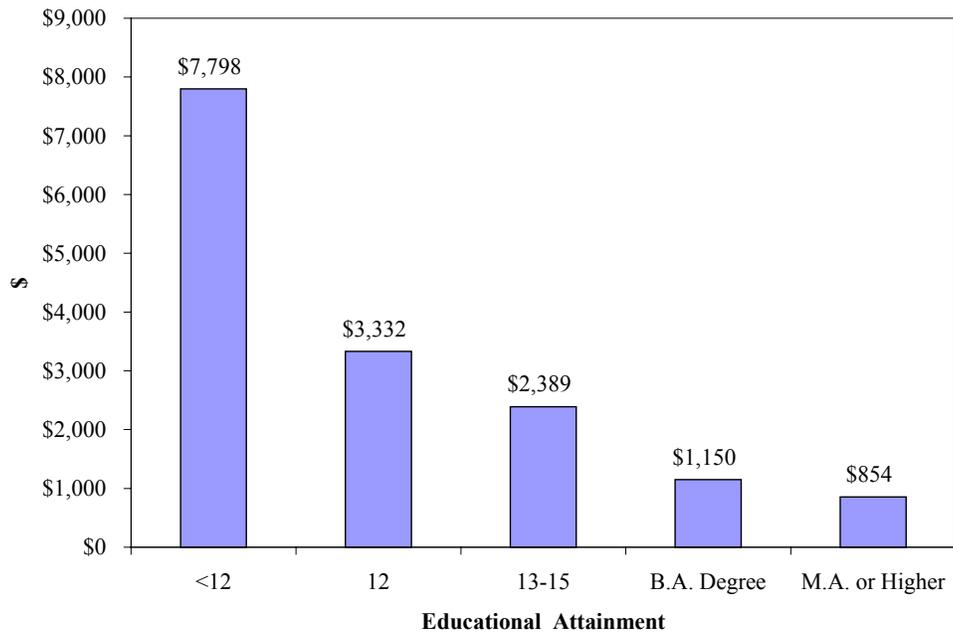
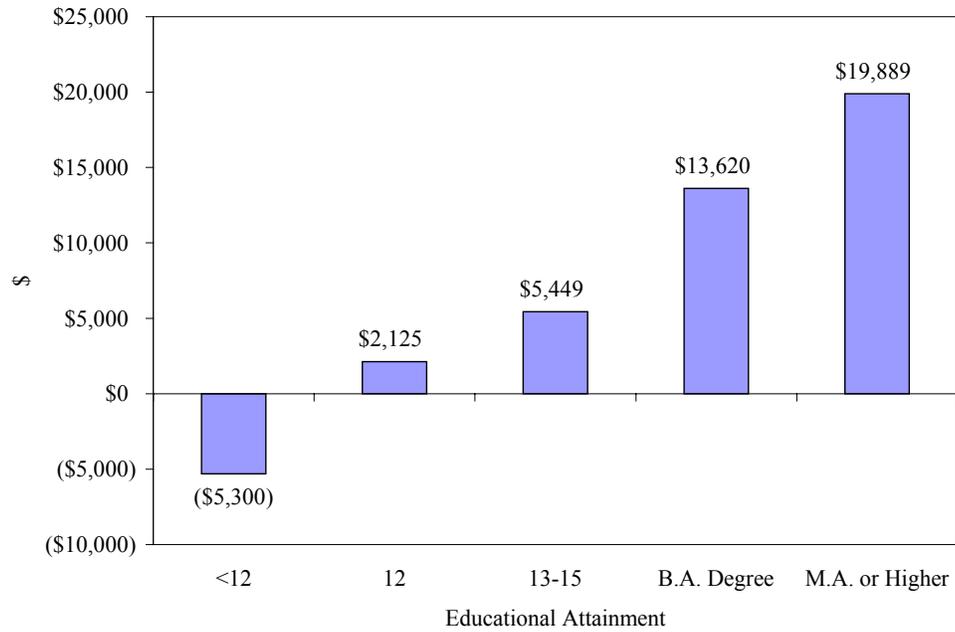


Chart 36:  
Mean Taxes Paid- Transfers Received by Non-Enrolled 16-64 Year Old  
Adults in Massachusetts by Educational Attainment, 2002-2004 Averages



Another way of depicting the fiscal impacts for each educational subgroup is to calculate the ratio of mean taxes paid to the mean value of transfers received during a given year. Chart 37 displays the ratio of tax payments to cash and in-kind benefits for 16-64 year olds in each of the five educational attainment categories in Massachusetts. Those adults lacking a high school diploma paid only 32 cents in payroll and income taxes for every dollar they received in cash and in-kind transfers. The ratio for all other educational subgroups was above 1 and rose sharply with higher educational attainment. High school graduates with no post-secondary schooling paid \$1.64 in taxes for every dollar of transfers that they received. This ratio of taxes to transfers rose to 3.28 for those with 1-3 years of college, to 12.85 for those with a Bachelor’s degree, and to a maximum of 24.29 for those with a Master’s or other advanced degree. Clearly, high school dropouts in Massachusetts impose major fiscal burdens on the rest of the society since the value of the government services they received are excluded from the denominator of the above ratios. These fiscal impacts also exclude the higher costs of incarceration and institutionalization associated with male dropouts and the true cost of the subsidies associated with providing medical care to less educated adults. Strengthening the educational attainment and earnings of less educated adults in Massachusetts could help improve the future fiscal position of both state and national governments.

Chart 37:  
Ratios of Mean Annual Taxes Paid to Transfers Received by Non-Enrolled 16-64 Year Old  
Adults in Massachusetts by Educational Attainment, 2002-2004 Averages

